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COMPARISON OF THE BASAL AND THE CO-ORDINATED LANGUAGE EXPERIENCE APPROACHES IN FIRST GRADE READING INSTRUCTION.

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THE EFFECTS OF TWO INSTRUCTIONAL APPROACHES, THE COORDINATED, BASAL LANGUAGE ARTS APPROACH AND THE INTEGRATED EXPERIENCE APPROACH TO COMMUNICATION, ON PUPILS' LANGUAGE DEVELOPMENT WERE EXAMINED. APPROXIMATELY 600 FIRST-GRADE STUDENTS WERE ASSIGNED RANDOMLY TO THE TWO APPROACHES. APPROXIMATELY 500 PUPILS COMPRISED THE FINAL, TOTAL PUPIL POPULATION AT THE CLOSE OF THE SCHOOL TERM. READINESS, INTELLIGENCE, AND ACHIEVEMENT TESTS WERE ADMINISTERED. ADDITIONAL INFORMATION CONCERNING THE TEACHERS, PUPILS, SCHOOL, AND COMMUNITY WAS SECURED. INSERVICE MEETINGS WERE SCHEDULED FOR ALL 24 PARTICIPATING FIRST-GRADE TEACHERS. DATA WERE ANALYZED BY MULTIVARIATE AND UNIVARIATE ANALYSIS OF VARIANCE. PUPILS IN THE INTEGRATED EXPERIENCE APPROACH HAD HIGHER MEAN SCORES ON THE WORD MEANING, PARAGRAPH MEANING, VOCABULARY, AND WORD STUDY SECTIONS OF THE STANFORD ACHIEVEMENT TEST. PUPILS IN THE HIGHER SOCIOECONOMIC LEVEL HAD HIGHER MEAN SCORES THAN THOSE IN THE LOWER AND MIDDLE SOCIOECONOMIC LEVELS. GIRLS HAD HIGHER MEAN SCORES THAN BOYS ON THE WORD MEANING, PARAGRAPH MEANING, SPELLING, AND WORD STUDY SECTIONS OF THE STANFORD ACHIEVEMENT TEST. DIFFERENCES WERE EVIDENT BETWEEN PUPILS AT MENTAL AGE LEVELS ON ALL SUBSECTIONS OF THE STANFORD TEST. ADDITIONAL RESULTS AND CONCLUSIONS, RECOMMENDATIONS, A BIBLIOGRAPHY, AND APPENDIXES ARE INCLUDED. (BK)

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Comparison of the Basal and the Coordinated Language Experience Approaches in First Grade Reading Instruction

Cooperative Research Project No. 2729

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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PROGRAM OF STUDIES IN READING AND LANGUAGE ARTS
SCHOOL OF EDUCATION
UNIVERSITY OF PITTSBURGH

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FOREWORD

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I. INTRODUCTION

A. Background of the Problem

Every child's successes and failures in life are filtered through his facility in communicating. As he thinks, gains personal insights, relates in social situations, and attempts to cope with reality, language is continually employed. It is therefore a prime responsibility of educators to guide each child as he progresses toward his potential level of language.

To a great extent, the levels of language employed by children are tempered by the kind and quality of their communication activities at school. Educators are continually seeking ways to improve the quality of classroom language arts instruction. Among the more recent instructional innovations are those approaches in the language arts that feature communication as an integral process, unified by numerous interrelationships.

For a number of years, interrelationships between the language arts have been considered in many articles. The following is a summary of ways the communication processes and their relationships have been viewed:[1]

---

[1] Elaine Vilscek, "Co-ordinating the Language Arts in the Primary Grades," A Report of the Twenty-first Annual Conference and Course on Reading, *Individualizing Instruction in Reading* (Pittsburgh: University of Pittsburgh, July, 1965); Ruth Strickland, "Reading in Its Setting," A Report of the Conference on Basic Issues in Teaching English, *College English* (October, 1959), Supplement; Lester Wheeler and Viola Wheeler, "Some Characteristic Differences and Similarities among the Language Arts," *Journal of Education*, CXXXVIII (October, 1955), 2-8; Walter Loban, "The Language of Elementary School Children," *NCTE Report No. 1* (Illinois: Illinois National Council of Teachers of English, 1963); and Gertrude Hildreth, "Reading and the Language Arts," *Education* (May, 1959).

1. Standards of linguistic symbolism or structure are shaped in perceiving, listening, non-vocal signaling, speaking, writing, and reading.
2. Transfer of learning in the language arts occurs naturally as communication activities are related.
3. General learning conditions, including pupil factors and pedagogical factors, affect pupil progress in each of the language acts.

Yet, the degree to which these purported interrelationships exist is at present scientifically unknown.

Research studies, too, have been directed toward examining the relationships in language. Hildreth[1] reported evidence of a positive relationship between a pupil's progress in reading and spelling. While Loban,[2] as a result of his seven-year study, charted relationships for the following factors: oral language with written language; oral language with reading; reading with written language; and health with general language ability. These interrelationships, as indicated in Loban's study, extended beyond the first grade.

Contrary to the evidence presented by a number of researchers, Martin[3] and Winter[4] report finding no significant relationships between the arts of communication. These two studies, though correlational in type, were not executed within instructional programs designed for co-ordinating the language arts.

---

[1] Gertrude Hildreth, "Experience Related Reading for School Beginners," Elementary English, XLII (March, 1965), 280-97.

[2] Loban, loc. cit.

[3] Clyde Martin, "Developmental Interrelationships among Language Variables of the First Grade," Elementary English, XXXII (March, 1955), 161-71.

[4] Clotilda Winter, "Interrelationships among Language Variables in Children of the First and Second Grades," Elementary English, XXXIV (February, 1957), 108-13.

In addition to research and literature about the theoretical logic of relationships in communication, a number of curricular demonstration projects have been initiated. Among them was the "Curriculum Continuity Demonstration Project in Pittsburgh," sponsored by the Ford Foundation and under the direction of Dr. J. Steele Gow, Jr. This co-operative venture between the University of Pittsburgh and the Pittsburgh Public Schools began about four years ago. One of the major objectives of the project was to consider and develop co-ordinated curricular guidelines in the language arts for pupils, kindergarten through grade twelve. Teachers and supervisory personnel from the Pittsburgh Public Schools and faculty members from various related academic disciplines at the University of Pittsburgh participated in committee endeavors. At the close of four years, a co-ordinated language arts curriculum guide to basic instruction was completed.

Among the most significant results of this curricular experience were the insights gained during co-ordinated curriculum building. Many questions about the effects of a co-ordinated instructional plan in communication, at the close of the demonstration project, remained to be answered only through scientific research. It is, thus, the purpose of this study to extend some earlier considerations in examining the outcomes of a co-ordinated basal language arts program and an integrated individualized language arts plan in first grade.

B. Review of Related Research

To provide a conceptual framework for this study, the following review of research will necessarily include: (1) studies directly related to the two instructional approaches examined, (2) studies featuring audio-visual-oral factors related to reading, (3) investigations involving socio-economic factors affecting language activities, (4) significant implications of sex differences in language readiness and instructional procedures, and (5) significant implications of mental age in language readiness and reading achievement.

1. The Experience Approach vs. A Traditional Basic Approach to Beginning Reading

Studies in reading directed toward discovering a best approach to beginning reading instruction were initiated in the later 1920's. Between 1925 and 1965, thousands of research studies, varying in quality, were inaugurated.

In an article published in 1951, Dr. J. Wayne Wrightstone[1] summarized investigations in which activity-related methods were compared to standard basal reader procedures. He concluded that, by the end of third grade, pupils who were systematically taught by activity-related methods were reading as well as or better than pupils instructed through a traditional basic approach. Standardized reading survey test results were employed as criteria for pupil comparisons.

In a more recent article by Hildreth,[2] a number of other comparative studies involving experience-related approaches and basal approaches were cited. Studies reviewed included those by A. I. Gates, M. Batchelder, and Jean Betzner (1926); James Tippett and others (1927); Julia E. Dickson and Mary E. McLean (1929); Gertrude Hildreth (1930); Mabel V. Morphett and Carleton Washburne (1940); J. L. Meriam (1930, 1933); J. Murray Lee (1933); Elsworth Collings (1933); Board of Education, New York City (1942); D. E. M. Gardner (1942); J. Wayne Wrightstone (1944); and Sonja Karsen (1954). As indicated by Dr. Hildreth in all of the studies, except the Gates-Batchelder-Betzner investigation and the J. Murray Lee study, measured results favored the experience-oriented instructional methods. The two studies that reflected the superiority of pupils in basal approaches were limited in testing procedures employed and careful planning of instructional guidelines.

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[1] J. Wayne Wrightstone, "Research Related to Experience Records and Basal Readers," Bulletin of the International Council for Improvement of Reading Instruction, V (1951), 5-6.

[2] Hildreth, Elementary English, XLII.

At the close of a five-year investigation, Allen[1] reported his findings when children were taught through the basic approach, individualized approach, and language experience approach. Pupils who were taught through the language experience approach made as much as or more progress in reading, as measured by standardized tests, than pupils taught through individualized and basic approaches. This study included children representing a normal distribution of mental abilities.

The adequacy of basal materials in teaching reading was investigated by Strickland.[2] A comparative analysis was made between the oral language patterns of 575 pupils in grades one to six and language patterns found in basal readers. Strickland concluded that pupils' oral language patterns are much more varied than patterns found in basal readers even though some congruence between speech patterns and reading materials is desirable. The Integrated Experience Approach to Communication does lend to this desired congruence.

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[1] Roach Van Allen and the San Diego Public Schools, "The Approaches to Teaching Reading," International Reading Association Proceedings, Challenge and Experiment in Reading, VII (1962), 153-54.

[2] Ruth Strickland, "The Language of Elementary School Children: Its Relationship to the Language of Reading Textbooks and the Quality of Reading of Selected Children," Bulletin of the School of Education (Indiana University), XXXVIII (July, 1962).

Sperry[1] evaluated three reading instructional approaches: the basal, individualized, and unclassified. Individualized instructional procedures were significantly superior. The investigator further concluded that pupils, surrounded by many communication processes, need richer vocabularies than those provided in basal materials.

2. Studies Featuring Audio-Visual-Oral Factors Related to Reading

In much of the current literature, one may find reference to the acquisition of auditory, visual, and oral expressional skills as pre-requisite in learning to read. Language approaches should include media through which these factors receive attention. The subsequent research studies support the values of these pre-reading instructional premises.

Rossignol[2] investigated the relationships between the hearing acuity, speech production, and reading performance of 229 first and second graders. She found that visual clues were very important in the learning of new words and that reading performance varied significantly with speech production and hearing acuity.

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[1] Florence Sperry, "The Relationship between Patterns of Reading Instruction and Reading Achievement in the Primary Grades," Dissertation Abstracts, XXII (1961), 129.

[2] Lois Rossignol, "The Relationships among Hearing Acuity, Speech Production, and Reading Performance Grades 1A, 1B, and 2A" (unpublished Doctor's dissertation, Teachers College, Columbia University, 1949).

One of the most outstanding studies of background factors related to reading was initiated by Loban[1] and is presently in progress. At the close of seven years of this investigation involving 338 children of varied sex, racial backgrounds, intellectual ability, and socio-economic levels from kindergarten through grade twelve, Loban reviewed the objectives and conceivable outcomes of his investigation. The objectives of the investigation include determining whether or not there are definite, identifiable sequences in language development, whether there are predictable stages of language growth, and whether children vary in language ability or gain proficiency in its use. Among his findings after seven years, Loban reported the development of a fundamental method of analysis in studying children's language. The procedures he proposed combined the concept of a meaningful syntactic unit with phonological methods of segmentation through which non-communicative elements are isolated and identified. He further concluded that a pupil's flexibility within basic sentence patterns can be considered a measure of language proficiency at elementary grade levels. Competence in spoken language, too, was determined to be basic for development of competence in reading and writing.

3. Investigations Involving Socio-economic Factors Affecting Language Activities

Much of the related literature is directed toward establishing the fact that pupils from each of the levels of the social strata have unique language experiences. In some instances, pupils from lower socio-economic levels may possess a repertoire of experiences that foster the development of a paucity of concepts requisite for learning to read in structured basal materials.

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[1] Loban, op. cit.

Hilliard and Troxell[1] found that pupils who have developed concepts related to beginning reading through personal experiences make more rapid progress in learning to read.

In studies by Dominic[2] and Kress,[3] the investigators concluded that disadvantaged pupils are penalized in learning to read unless the pre-reading and continuing instructional programs provide for exercises in auditory discrimination, vocabulary or concept analysis, and in syntax analysis or practice.

Vilscek[4] concluded that mental age and socio-economic environment are separate and independent factors affecting pupils' achievement in first grade reading. She further noted that a mental age of at least 7 1/2 years was requisite before 75 per cent of the pupils from lower socio-economic levels could achieve up to national norms through traditional instruction. Pupils from upper socio-economic levels made comparable progress in reading at mental ages of 6 1/2 years when the instructional program was initiated.

---

[1] George Hilliard and Eleanor Troxell, "Informational Background as a Factor in Reading Readiness and Reading Progress," Elementary School Journal, XXXVIII (December, 1937), 255-63.

[2] Thomas Dominic, "Oral Language Sentence Structure and Vocabulary of Kindergarten Children Living in Low Socio-economic Urban Areas" (unpublished Doctor's dissertation, Wayne State University, 1961).

[3] Roy Kress, "An Investigation of the Relationship between Concept Formation and Achievement in Reading," Dissertation Abstracts, XVI (March, 1956), 573-74.

[4] Elaine C. Vilscek, "An Analysis of the Effects of Mental Age Levels and Socio-economic Levels on Reading Achievement in First Grade" (unpublished Doctor's dissertation, University of Pittsburgh, 1964).

4. Significant Implications of Sex Differences in Language Readiness and Instructional Procedures

Examples of the superiority of girls in beginning reading achievements as compared to those of boys abound in the literature. Gates[1] reported his findings in a study of more than 13,000 children in grades two through eight. He found that at each grade level girls achieved significantly higher than boys.

Additional investigations of sex differences by Dykstra,[2] Gavel,[3] Huggett,[4] Koontz,[5] Samuels,[6] and Walker[7] demonstrated the superiority of girls to boys in both reading readiness and reading achievement. Anderson, Dixon and Hughes[1] also found that girls had the tendency to read earlier than boys. Wilson, Burke, and Fleming[2] found that boys had the greater tendency to reverse letters and confuse letter and word forms. Although the quality of research reported here varies, in general one can see a pattern of superiority of girls in readiness for reading.

---

[1] A. Gates, "Sex Differences in Reading Ability," Elementary School Journal, XLVI (1961), 431-34.

[2] R. Dykstra, "The Relationship between Selected Reading Readiness Measures of Auditory Discrimination and Reading Achievement at the End of First Grade," Dissertation Abstracts, XXIV (1963), 195-96.

[3] Sylvia Gavel, "Patterns of Growth in First Grade Reading," Dissertation Abstracts, XVIII (1958), 1740.

[4] A. J. Huggett, "An Experiment in Reading Readiness," Journal of Educational Research, XXXII (1938), 263-70.

[5] E. R. Koontz, "Significant Factors Associated with Reading Achievement in the Primary Grades; a Longitudinal Study," Dissertation Abstracts, XXI (1961), 2160-61.

[6] F. Samuels, "Sex Differences in Reading Achievement," Journal of Educational Research, XXXVI (1943), 594-603.

[7] C. Walker, "The Relationships of Certain Selected Variables in First Grade Reading Achievement," Dissertation Abstracts, XXIV (1964), 3242.

Current research findings[3] seem to also support an environmental explanation of sex differences in reading achievement. But a study by Preston[4] at an elementary school in Wiesbaden, Germany, revealed a general superiority of boys involved in the reading act. The reading development of girls could have been sufficiently retarded by differential educational treatment or cultural influences.

Singer,[5] recognizing that many investigations have been concerned with relating causal determinants of sex differences to reading, examined subskills that uniformly or differentially influence subskills and capacities related to speed and power of reading. Using 927 pupils in grades three, four, five, and six data from an extensive battery of tests were transformed into standard scores with a common mean of 100 and a standard deviation of 10. Statistical significance or differences between means were computed for each variable. Results indicated that girls are more mature and achieve more than boys at the third grade level and continue to accelerate through the intermediate grades. This is one of the better designed and executed studies currently reported in the literature.

---

[1] I. H. Anderson, R. W. Dixon, and B. O. Hughes, "Age of Learning to Read and Its Relation to Sex, Intelligence and Learning Achievement in the Sixth Grade," Journal of Educational Research, XLIX (1956), 447-53.

[2] F. T. Wilson, A. Burke, and C. W. Fleming, "Sex Differences in Beginning Reading in a Progressive School," Journal of Educational Research, XXXII (1939), 570-82.

[3] J. A. Holmes and H. Singer, "Theoretical Models and Trends Toward More Basic Research in Reading," Review of Educational Research, XXXIV (1964).

[4] R. C. Preston, "Reading Achievement of German and American Children," School and Society, XC (1962), 350-54.

[5] H. Singer, "Substrata Factor Theory of Reading: Grade and Sex Differences in Reading at the Elementary School Level," I.R.A. Proceedings, Improvement of Reading Through Classroom Practice, IX (1964), 313-20.

Yet, Balow[1] contended that when reading readiness was held statistically constant, the differences in achievement between the sexes were too small to be significant. The assumption that reading readiness can be held constant is a theoretical fallacy. There is no way to ascertain the amount of natural and maturational progress that will occur during an instructional period, even when initial advantages are controlled. In addition, some studies may be cited to support the contention that the contents of current basal readers are inappropriate for boys. Mazurkiewiecz[2] cites social and cultural influences on the reading act. Among the research findings the following is noted: "It was common for boys to identify reading as a feminine process." Although this might be an observed fact with which few people would take issue, the research design here was inappropriate. Mazurkiewiecz used eleventh grade boys in his study. He based his findings on the correlation of reading achievement of the subject above or below the median of the group investigated and the responses on an attitude rating. Basing achievement evaluation on a median score certainly fails to take into account the many compounding factors present in measuring reading success. However, as one examines the earlier basal readers it is easily noted that the stories center around interests that are more feminine than masculine. It has also been noted that girls like stories written for boys, but the reverse does not hold true.

---

[1] I. H. Balow, "Sex Differences in First Grade Reading," Elementary English Journal, XL (1963), 303-307.

[2] A. Mazurkiewiecz, "Social-Cultural Influences and Reading," Journal of Developmental Reading, III (1960), 254-63.

5. Significant Implications of Mental Age in Language Readiness and Reading Achievement

Mental age has been a factor of concern in examining reading readiness and reading achievement since people began reporting in the literature. Generally investigators have concluded that mental age is closely related to both reading readiness and reading achievement. Bigelow,[1] Carter and McGinnis,[2] Dean,[3] Rosebrook,[4] Thomson,[5] and the landmark study of Washborne and Morphett,[6] all concluded that a mental age of six and one-half is required for pupils to progress reasonably.

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[1] Elizabeth S. Bigelow, "School Progress of Underaged Children," Elementary School Journal, XXXV (1934-35), 186-92.

[2] H. L. Carter and Dorothy McGinnis, Teaching Individuals to Read (Boston: D. C. Heath, 1962).

[3] C. D. Dean, "Predicting First Grade Reading Achievement," Elementary School Journal, XL (1939), 609-16.

[4] Wilda Rosebrook, "Preventing Reading Deficiencies," Elementary School Journal, XXXVI (1935), 276-80.

[5] J. L. Thomson, "Big Gains from Postponed Reading," Journal of Education, CXVII (1934), 445-46.

[6] C. Washburne and Mable U. Morphett, "When Should Children Begin to Read?" Elementary School Journal, XXXI (1931), 496-503.

In Smith and Dechant's[1] review of numerous studies and summaries of research, it was indicated that positive correlations invariably existed between reading achievement and mental ability. These conclusions were further supported by Vilscek's[2] later study of 416 first grade pupils from two levels of socio-economic strata where it was found that mental age level is a powerful variable affecting a first grade pupil's success in reading. Although Vilscek enumerates very carefully the delimitations and limitations of her investigation, it is evident that carefully designed and executed experimental research was operant.

Some studies suggest that mental age is a more basic determinant of reading success when children reach the level at which efficient reading skills are necessary for success in content subject areas. Bond and Tinker[3] maintain that by the end of first grade the correlation between intelligence and reading is generally around .35 but by sixth grade it increases to .63. Manolakes and Sheldon[4] stated that the correlation between reading achievement on the Progressive Achievement Test and intelligence as measured by the California Test of Mental Maturity was greater after fourth grade and most reliable at twelfth. Coefficients of correlation ranged from .30 at grade one to .78 at grade twelve. A total of 366 pupils from grades one through twelve participated in the study.

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[1] H. Smith and E. Dechant, Psychology in Teaching Reading (New Jersey: Prentice Hall, 1961).

[2] Elaine C. Vilscek, "An Analysis of the Effects of Mental Age Levels and Socio-economic Levels on Reading Achievement in First Grade" (unpublished Doctor's dissertation, University of Pittsburgh, 1964).

[3] G. Bond and M. Tinker, Reading Difficulties: Their Diagnosis and Correction (New York: Appleton-Century-Crofts, 1961).

[4] G. Manolakes and W. Sheldon, "The Relation between Reading Test Scores and Language Factors in Intelligence Quotients," Elementary School Journal, XL (1955), 346-50.

Despite what appears to be conclusive evidence as to the correlation between reading success and mental age a number of opposing points of view should be examined.

Tyler[1] contended that depending upon mental age as a criterion of readiness was faulty because of the various sources of errors in the measures such as validity, reliability, and predictability of intelligence tests as well as the different sources of variance in pupil performance. Anderson and Dearborn[2] considered that a mental age of six as an index to readiness is meaningless unless the readiness program following was appropriately designed.

Spache[3] stated that a mental age of six is desirable because frequently the teacher is unwilling or unable to differentiate instruction according to pupil needs. He claims it is the inflexible and mass oriented reading programs which demand a higher mental age and elevate it as an important factor in first grade classrooms.

Gates[4] pointed out that the crucial age depends on the type of materials presented, teaching procedures utilized, children's homes, experiential backgrounds, and individual differences. Certainly, no one could possibly quarrel with such a truism. Admittedly, many variables are present in the reading act, but the available evidence at present indicates that mental age is one of the most important.

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[1] F. T. Tyler, "Issues Related to Readiness to Learn," Theories of Learning and Instruction, ed. E. R. Hilgard, Yearbook of National Social Studies, Education, LXIII, Part I (1964), 210-39.

[2] I. H. Anderson and W. Dearborn, The Psychology of Teaching Reading (New York: Ronald Press, 1952).

[3] G. D. Spache, Reading in the Elementary School (Boston: Allyn and Bacon, 1964).

[4] A. Gates, "The Necessary Mental Age for Beginning Reading," Elementary School Journal, XXXVIII (1937), 497-508.

C. Study Potential

As indicated in the research studies cited, many questions about the effects and components of language arts approaches remain to be answered. To extend the findings reported, the following additional features were considered in this investigation:

1. Statistical procedures that lent to determining and controlling on initial pupil population differences between methods were considered.

2. Currently improved standardized and informal evaluative instruments were used.

3. A random population sample of approximately 600 first graders in metropolitan Pittsburgh, representing three socio-economic levels and an intelligence quotient range from 80 to 160, was drawn.

4. Current developmentally defined instructional materials and procedures were employed.

5. Common correlated language arts objectives were consistently formulated for teachers in both instructional approaches. Therefore, teachers in each approach worked toward accomplishing common goals, but through different means and media.

6. Provisions were made for supplementing and individualizing instruction in both approaches.

D. Definition of Terms

1. Co-ordinated Basal Language Arts Approach — the method of developing an initial language readiness and continuing language arts instruction by using practices, procedures, and materials suggested in the new multi-ethnic Scott Foresman basal reading program and basic language arts program.

2. The Integrated Experience Approach to Communication — the method of developing an initial language readiness and continuing langugage arts instruction by retaining pupils' natural language patterns as the foundation in fostering aural-oral-visual-graphic aspects of the language arts program. Practices, procedures, and materials are suggested in the developmentally defined curriculum guide for teachers.

3. Acts or Arts of Communication — the six processes of language that include: perceiving, listening, speaking, non-vocal signaling, writing, and reading. In perceiving, listening, and reading pupils employ appropriate sensory receptors. To transmit feelings or ideas, speaking, non-vocal signaling, and writing serve as reasonable media.

4. Channels of Language — seven distinct channels of learning transfer that fuse together the six arts of communication. Labels proposed for these channels include: Perceptual-Conceptual Development, Physiological Aspects, Mechanics, Functional Linguistics, Comprehension, Study Techniques, and Aesthetic or Cultural Appreciations.

a. Perceptual-Conceptual Development — process through which children learn to interpret and express everything sensed. Growth in this area is cloaked by past and present experiences and values; reflects cultural, psychological, and biological influences; and is principally characterized by kind and degree of arousal of meaning.

b. Physiological Aspects — processes generally labeled as associated with visual acuity, auditory acuity, kinesthetic acuity, posture, and visual manifestations of non-verbal dramatization.

c. Mechanics — processes that require use of one or more of the senses. Motor co-ordination, production of speech sounds, and other physiological aspects dictate the degree to which any child may or should be expected to master mechanics. The following are examples of language mechanics: auditory and visual discrimination, phonetic and structural analysis and synthesis, or handwriting legibility.

d. Functional Linguistics — those processes, overt and conceivably abstract, that necessitate understanding and application of linguistic symbolism and structure. Abstractly labeling or generalizing perceptions would serve as an example. Other facets of functional linguistics might include recognition and generation of sentence patterning; awareness of pitch, pause, juncture; or attention to dialectic or colloquial profiles.

e. Comprehension — growth in specific types of abilities including unit and global considerations. Specific areas to be considered include: vocabulary, main ideas, following directions, creative interpretation, critical evaluation, etc.

f. Study Techniques -- processes established so that learning through all six facets of language can be most effective. Study techniques may include: ordering steps in perceiving, knowing how to utilize the differential between a speaker's rate and the listener's rate, reference methods, ways to convey information to others, etc.

g. Aesthetic and Cultural Appreciations -- processes that directly reflect growth in a pupil's sensitivity to beauty and to his literary heritage. Learning in this channel will be overtly manifested through pupil personality development, stimulation and breadth of interests, and discriminative tastes.

5. Understandings -- those fundamental knowledges or generalizations in each of the language acts, categorized under the labeled language channels.

6. Applications -- those habits, skills, or abilities in communication essential in acquiring a language facility.

7. Personal Responses -- those attitudes, actions, or appreciations that are desirable attributes of the verbal organism.

8. Socio-economic Level I -- that group of children from upper socio-economic levels, with an Index of Social Position score of 20-58.

9. Socio-economic Level II -- that group of children from middle socio-economic levels, with an Index of Social Position score of 59-96.

10. Socio-economic Level III -- that group of children from lower socio-economic levels, with an Index of Social Position score of 97-134.

11. Experimental Group IA_1 — girls from the upper socio-economic levels within the classes taught through an Integrated Experience Approach to Communication.

12. Experimental Group IA_2 — boys from the upper socio-economic levels within the classes taught through an Integrated Experience Approach to Communication.

13. Experimental Group IIA_1 — girls from the middle socio-economic levels within the classes taught through an Integrated Experience Approach to Communication.

14. Experimental Group IIA2 — boys from the middle socio-economic levels within the classes taught through an Integrated Experience Approach to Communication.

15. Experimental Group IIIA_1 — girls from the lower socio-economic levels within the classes taught through an Integrated Experience Approach to Communication.

16. Experimental Group IIIA_2 — boys from the lower socio-economic levels within the classes taught through an Integrated Experience Approach to Communication.

17. Experimental Group IB_1 -- girls from the upper socio-economic levels within the classes taught through the Co-ordinated Basal Language Arts Approach.

18. Experimental Group IB_2 — boys from upper socio-economic levels within the classes taught through a Co-ordinated Basal Language Arts Approach.

19. Experimental Group IIB_1 — girls from middle socio-economic levels within classes taught through a Co-ordinated Basal Language Arts Approach.

20. Experimental Group IIB_2 -- boys from middle socio-economic levels within classes taught through a Co-ordinated Basal Language Arts Approach.

21. Experimental Group $IIIB_1$ -- girls from lower socio-economic levels within classes taught through a Co-ordinated Basal Language Arts Approach.

22. Experimental Group $IIIB_2$ -- boys from lower socio-economic levels within classes taught through a Co-ordinated Basal Language Arts Approach.

23. Directed Reading Activity -- those developmental instructional procedures in reading that include: establishing a background of concepts, extending vocabulary, guiding reading for understanding, refining word recognition techniques and study procedures, oral reading, and fostering interests and tastes.

24. Topical Interest Areas -- broadly based topical themes, related to the interests of six and seven year olds, that serve in extending pupils' experiences through an Integrated Experience Approach to Communication.

25. Mental Age Level 1 -- that group of children with raw scores on the Pintner-Cunningham Intelligence Test representing the top third of the test's raw scoring range.

26. Mental Age Level 2 -- that group of children with raw scores on the Pintner-Cunningham Intelligence Test representing the middle third of the test's raw scoring range.

27. Mental Age Level 3 -- that group of children with raw scores on the Pintner-Cunningham Intelligence Test representing the lowest third of the test's raw scoring range.

28. Experimental Group 111 — girls from the high mental age levels within classes taught through an Integrated Experience Approach to Communication.

29. Experimental Group 112 — boys from the high mental age levels within classes taught through an Integrated Experience Approach to Communication.

30. Experimental Group 211 — girls from the middle mental age levels within classes taught through an Integrated Experience Approach to Communication.

31. Experimental Group 212 — boys from the middle mental age levels within classes taught through an Integrated Experience Approach to Communication.

32. Experimental Group 311 — girls from the low mental age levels within classes taught through an Integrated Experience Approach to Communication.

33. Experimental Group 312 — boys from the low mental age levels within classes taught through an Integrated Experience Approach to Communication.

34. Experimental Group 121 — girls from the high mental age levels within classes taught through a Co-ordinated Basal Language Arts Approach.

35. Experimental Group 122 — boys from the high mental age level within classes taught through a Co-ordinated Basal Language Arts Approach.

36. Experimental Group 221 — girls from the middle mental age levels within classes taught through a Co-ordinated Basal Language Arts Approach.

37. Experimental Group 222 -- boys from the middle mental age levels within classes taught through a Co-ordinated Basal Language Arts Approach.

38. Experimental Group 321 -- girls from the low mental age levels within classes taught through a Co-ordinated Basal Language Arts Approach.

39. Experimental Group 322 -- boys from the low mental age levels within classes taught through a Co-ordinated Basal Language Arts Approach.

II. PROBLEMS ONE, TWO, AND THREE

A. Problem One

1. Statement of Problem One: Analysis of the Effects of Socioeconomic Levels, Method, and Sex on Pupil Achievement in First Grade

There is no statistically significant difference in the mean silent and oral reading achievement, language understandings, language applications, personal responses in communication, spelling achievement, written expression, and creative thinking raw scores and rating scores between those first grade boys and girls from three socioeconomic levels under two instructional methods: the Co-ordinated Basal Language Arts Approach and the Integrated Experience Approach to Communication after 140 days of instruction.

2. Elements of Problem One

The problem involves three main effects and four interaction hypotheses with twenty-six categories of raw scores and rating scores from instruments administered at the conclusion of the experiment. The hypotheses tested are as follows:

a. There is no statistically significant difference between those first grade pupils in the Co-ordinated Basal Language Arts Approach and the Integrated Experience Approach to Communication on these criterion variables:

(1) reading attitude as measured by the San Diego Pupils' Inventory of Reading Attitudes;

(2) word meaning, paragraph meaning, vocabulary, spelling, and word study as measured by the Stanford Achievement Test, Primary Battery I, Form X;

(3) language understandings, language applications, and personal responses in communicating as indicated by an informally devised diagnostic rating of language outcomes for first graders;

(4) fluency, flexibility, elaboration, and originality as measured by Task 1: Figure Completion, Abbreviated Form VII, Minnesota Tests of Creative Thinking;

(5) fluency, flexibility, elaboration, and originality as measured by Task 3: Product Improvement, Abbreviated Form VII, Minnesota Tests of Creative Thinking;

(6) rate and accuracy of oral reading as indicated by the Gilmore Oral Reading Test, Form A;

(7) word pronunciation as measured with the Gates Word Pronunciation Test, Fry Phonetically Regular Words Oral Reading Test, and the Karlsen Phonemic Word Test;

(8) mechanics ratio, total words spelled correctly, and total running words on a writing sample (Restricted Stimulus Measure).

b. There is no statistically significant difference between those first grade pupils from upper socio-economic levels, middle socio-economic levels, and lower socio-economic levels on the same twenty-six criterion variables listed in the first hypothesis.

c. There is no statistically significant difference between boys and girls in first grades on the twenty-six criterion variables listed in the first and second hypotheses.

d. There is no statistically significant interaction between socio-economic levels, sex, and method for first grade pupils on the criterion variables considered in hypotheses (a), (b), and (c) above.

e. There is no statistically significant interaction between socio-economic levels and method for first grade pupils on the criterion variables listed.

f. There is no statistically significant interaction between sex and method for first grade pupils on the criterion variables listed.

g. There is no statistically significant interaction between sex and socio-economic levels for first grade pupils on the criterion variables listed.

More specifically, the hypotheses are stated with reference to the following analysis chart for each of the twenty-six raw scores and ratings for the criterion variables:

		Socio-economic Levels					
		I: High		II: Middle		III: Low	
		1: Female	2: Male	1: Female	2: Male	1: Female	2: Male
A	Integrated Experience Approach to Communication						
B	Co-ordinated Basal Language Arts Approach						

a. Methods. There is no statistically significant difference between total first grade pupils in Experimental Groups lA_1, IA_2, IIA_1, IIA_2, $IIIA_1$, $IIIA_2$ and total first grade pupils in Experimental Groups

IB_1, IB_2, IIB_1, IIB_2, $IIIB_1$, $IIIB_2$, on the twenty-six criterion variables listed in the seven main effects and interaction hypotheses.

b. Socio-economic Levels. There is no statistically significant difference between total first grade pupils in Experimental Groups IA_1, IA_2, IB_1, IB_2; total first grade pupils in Experimental Groups IIA_1, IIA_2, IIB_1, IIB_2; and total first grade pupils in Experimental Groups $IIIA_1$, $IIIA_2$, $IIIB_1$, $IIIB_2$ on the twenty-six criterion variables listed in the main effects and interaction hypotheses.

c. Sex. There is no statistically significant difference between total first grade girls in Experimental Groups IA_1, IB_1, IIA_1, IIB_1, $IIIA_1$, $IIIB_1$ and total first grade boys in Experimental Groups IA_2, IB_2, IIA_2, IIB_2, $IIIA_2$, $IIIB_2$ on the twenty-six criterion variables.

d. Socio-economic Levels x Sex x Method. There is no statistically significant interaction between comparative combinations of pupils in Experimental Groups IA_1, IA_2, IB_1, IB_2, IIA_1, IIA_2, IIB_1, IIB_2, $IIIA_1$, $IIIA_2$, $IIIB_1$, $IIIB_2$ on the twenty-six criterion variables.

e. Socio-economic Levels x Method. There is no statistically significant interaction between comparative combinations of pupils in Experimental Groups IA_1, IA_2; IIA_1, IIA_2; $IIIA_1$, $IIIA_2$ and Experimental Groups IB_1, IB_2; IIB_1, IIB_2; $IIIB_1$, $IIIB_2$ on the twenty-six criterion variables.

f. Sex x Method. There is no statistically significant interaction between comparative combinations of pupils in Experimental Groups IA_1, IIA_1, $IIIA_1$; IIB_1, IIB_1, $IIIB_1$; and Experimental Groups IA_2, IIA_2, $IIIA_2$; IB_2, IIB_2, $IIIB_2$ on the twenty-six criterion variables.

g. Sex x Socio-economic Levels. There is no statistically significant interaction between comparative combinations of pupils in Experimental Groups IA_1, IB_1; IIA_1, IIB_1; and Experimental Groups IA_2, IB_2, IIB_1, IIB_2, $IIIA_1$, $IIIB_1$ on the twenty-six criterion variables.

B. Problem Two

1. Statement of Problem Two: Analysis of the Effects of Mental Age Levels, Methods, and Sex on Pupil Achievement in First Grade

There is no statistically significant difference in silent reading, language understandings, language applications, personal responses in communication, and spelling achievement between those first grade boys and girls within three classification levels of mental age under two instructional methods: the Co-ordinated Basal Language Arts Approach and the Integrated Experience Approach to Communication after 140 days of instruction.

2. Elements of Problem Two

The problem involves three main effects and four interaction hypotheses with ten categories of raw scores and rating scores from instruments administered at the conclusion of the experiment. The hypotheses tested are as follows:

a. There is no statistically significant difference between those first grade pupils in the Co-ordinated Basal Language Arts Approach and the Integrated Experience Approach to Communication on these criterion variables:

(1) reading attitudes as measured by the San Diego Pupils' Inventory of Reading Attitudes;

(2) word meaning, paragraph meaning, vocabulary, spelling, and word study as measured by the Stanford Achievement Test, Primary Battery I, Form X;

(3) language understandings, language applications, and personal responses in communicating as indicated by an informally devised diagnostic rating of language outcomes for first graders.

b. There is no statistically significant difference between those first grade pupils from high, middle, and low mental age level classifications on the same ten criterion variables listed in the first hypothesis.

c. There is no statistically significant difference between boys and girls within the mental age levels in first grade on the ten criterion variables listed in the first and second hypotheses.

d. There is no statistically significant interaction between mental age levels, sex, and method for first grade pupils on the criterion variables considered in hypotheses (a), (b), and (c).

e. There is no statistically significant interaction between mental age levels and method for first grade pupils on the criterion variables listed.

f. There is no statistically significant interaction between sex and method within mental age levels for first grade pupils on the criterion variables.

g. There is no statistically significant interaction between sex and mental age levels for first grade pupils on the criterion variables listed.

More specifically, the hypotheses are stated with reference to the following analysis chart for each of the ten criterion variables:

		Mental Age Levels					
		I: High		II: Middle		III: Low	
		1. Female	2. Male	1. Female	2. Male	1. Female	2. Male
1	Integrated Experience Approach to Communication						
2	Co-ordinated Basal Language Arts Approach						

a. Methods. There is no statistically significant difference between total first grade pupils in Experimental Groups 111, 112, 211, 212, 311, 312 and total first grade pupils in Experimental Groups 121, 122, 221, 222, 321, 322 on the criterion variables.

b. Mental Age Levels. There is no statistically significant difference between total first grade pupils in Experimental Groups 111, 112, 121, 122; total first grade pupils in Experimental Groups 211, 212, 221, 222; and total first grade pupils in Experimental Groups 311, 312, 321, 322 on criterion variables.

c. Sex. There is no statistically significant difference between total first grade girls in Experimental Groups 111, 121, 211, 221, 311, 321 and total first grade boys in Experimental Groups 112, 122, 212, 222, 312, 322 on the criterion variables.

d. Mental Age Levels x Sex x Method. There is no statistically significant interaction between comparative combinations of pupils in Experimental Groups 111, 112, 211, 212, 311, 312, 121, 122, 221, 222, 321, 322 on the criterion variables.

e. *Mental Age Levels x Method*. There is no statistically significant interaction between comparative combinations of pupils in Experimental Groups 111, 112; 211, 212; 311, 312 and Experimental Groups 121, 122; 221, 222; 321, 322 on the criterion variables.

f. *Sex x Method*. There is no statistically significant interaction between comparative combinations of pupils in Experimental Groups 111, 211, 311; 121, 221, 321; and Experimental Groups 112, 212, 312; 122, 222, 322 on the criterion variables.

g. *Sex x Mental Age Levels*. There is no statistically significant interaction between comparative combinations of pupils in Experimental Groups 111, 121; 211, 221; 311, 321; and Experimental Groups 112, 122, 221, 222, 321, 322 on the criterion variables.

C. Statement of Problem Three: The Feasibility of Predictive Regression Analyses in First Grade

To what degree do relationships occur between and among the initial and final pupil-teacher variables? Are predictive regression patterns evident?

D. Delimitations and Limitations of Problems One, Two, and Three

1. The study was delimited to a random sample of pupils and teachers from the Pittsburgh Public Schools. Approximately 600 pupils from twenty-four classrooms comprised the initial total group.

2. This research was also limited by the reliability and validity of initial and final evaluative instruments or procedures employed.

3. The study was delimited to use of raw scores whenever possible and a relatively short period of one school year during which it was conducted.

4. Since all teachers in the study were aware of their participation, the placebo effect was present. Its unmeasured effects further limited generalizations made from this study.

III. PROCEDURES AND TECHNIQUES

A. General Plan of the Study

The sequence of procedures in this study is outlined as follows:

1. In September, 1964, treatment groups were obtained and described.

2. The first two weeks of the school term were reserved as a period for pupils' orientation prior to the beginning of preliminary testing.

3. Initial pupil evaluations were obtained during a two-week period, September 21-October 2, by teachers under supervision and through use of the following measures:

    a. Pintner-Cunningham Primary Test, Pintner General Ability Tests, Form A for Grade 1, 1964.

    b. Detroit Word Recognition Test, Form B for Primary Grades, 1953.

    c. Individual Record Check List--Maturity Level for School Entrance and Reading Readiness for Kindergarten and First Grade, by Katharine Banham.

    d. Murphy-Durrell Diagnostic Reading Readiness Test, Revised Edition, 1964.

    e. Metropolitan Readiness Tests, Form A, Standardization Edition, 1964.

    f. Thurstone and Jeffrey Identical Forms--A Test of Perceptual Speed, 1956.

    g. Thurstone and Jeffrey Pattern Copying Test, 1964.

4. The instructional program began on October 5, 1964 and extended for the prescribed duration of 140 instructional days.

5. The socio-economic status of the groups was analyzed by using the weighted score of the Index of Social Position (Hollingshead and Redlich). A photographic charting and rating of each pupil's residence was employed in arriving at the composite social index. Information was also obtained from school records per pupil.

6. Additional related teacher, pupil, school, and community information secured included:

   a. Pupil: chronological age in months, amount of pre-first grade school experience, and total number of days absent.

   b. Teacher: age, highest degree held, sex, type of teaching certificate, total number of years of teaching experience, number of years of first grade teaching experience, marital status, number of children, attitude as measured by the San Diego Teachers Attitude Inventory, number of days absent, attrition, and rating of competence.

   c. School: length of school day, length of school year, number of first grade rooms in the building, number of first grade rooms in the school district, type of library facilities available to the class, class size as of May 1, 1965, and cost per pupil in average daily attendance.

d. Community: median number of years of education completed by adults living within the school's community, median income in the community, population of the community in which the school is located, and type of community.

7. In-service meetings were scheduled for all participating teachers and supervisory personnel before the opening of the school term in September. Supervision, consultation services, and additional in-service meetings were held from the beginning of September, 1964 through the end of May, 1965.

8. Prior to the outset of the instructional program, desired language learning outcomes for all pupils were charted. These expected outcomes were modified and refined throughout the duration of the investigation. Instructional guides and materials, congruent with the respective approaches being employed, were provided for participating teachers.

9. Teachers were also given some assistance in interpreting the preliminary test results for the first grade pupils. This information, thus, was used as an initial diagnostic assessment of pupils' strengths and needs. Accordingly, individualized instruction was provided for pupils.

10. The prescribed total of 140 instructional days was completed on May 14, 1965.

11. Final pupil evaluations were made during the two-week period, May 17-May 28, by the teachers and research staff under supervision and through use of the following standardized and informally devised measures:

a. Stanford Achievement Test, Form X, Primary I Battery, 1964.

b. Gates Word Pronunciation Test, Form I, 1953 (only administered to the sub-sample population).

c. Karlsen Phonemic Word Test, 1964 (only administered to the sub-sample population).

d. Fry Phonetically Regular Words Oral Reading Test (only administered to the sub-sample population).

e. Gilmore Oral Reading Test, Form A, 1951 (only administered to the sub-sample population).

f. San Diego Pupils Inventory of Reading Attitudes.

g. University of Pittsburgh Diagnostic Rating of Language Outcomes for First Graders, 1965.

h. Task 1: Figure Completion;

Task 3: Product Improvement, Abbreviated Form VII, Minnesota Tests of Creative Thinking (only administered to the sub-sample population).

i. Restricted Stimulus Measure of the following aspects of written expression: mechanical ratio, total words spelled correctly, and total running words (only administered to the sub-sample population).

j. Pupil Social Integration Measure, University of Pittsburgh, 1965.

k. Stanford-Binet Intelligence Test, Form L-M, 1960 (only administered to the sub-sample population).

12. All standardized and informal evaluative instruments were scored by the research staff. Participating teachers were not asked to score any of the instruments.

B. Pupil Population and Sampling

When the study was originally proposed, the investigators and the Pittsburgh Board of Education hoped to restrict sampling to children with intelligence quotients of 110 and above. The Detroit Intelligence Test administered in the kindergarten served as the preliminary screening instrument. Pupils were selected from the 241 first grades in the Pittsburgh Public Schools. Yet, first grade mental age test scores revealed that the gifted anticipated population had not been acquired. Pupils in the study had mental age raw scores that ranged from the highest to the lowest possible score on the Pintner-Cunningham Test of Mental Ability. Further statistical evaluation of the population suggested the pupils represented and could be more reasonably treated as a normalized distribution than one skewed in favor of gifted pupils. Further sub-sample testing, using the Stanford-Binet Intelligence Test re-affirmed these findings. Thus, the 600 pupils, hopefully, were randomly assigned to twenty-four classrooms. The teachers and classes were then, hopefully, randomly assigned to the two experimental treatments, the Integrated Experience Approach to Communication and the Co-ordinated Basal Language Arts Approach. Total pupils within the study were stratified for analysis across classes within socio-economic level classifications using the Hollingshead-

Redlich Index of Social Position and were again re-stratified across classes for analysis within mental age level categories.

In order to describe the population in this study more completely and to reaffirm whether or not randomization was evident in pupil assignment by method, a 3 x 2 x 2 analysis of variance was performed using the following descriptive data: teacher's degree; pupils' chronological age; pupil achievement on subsections of the Metropolitan Readiness Test, Murphy-Durrell Diagnostic Reading Readiness Test, Banham Individual Record Checklist, Thurstone-Jeffrey Tests; pupils' mental age raw scores on the Pintner-Cunningham Primary Mental Test; pupils' absences; pupils' pre-school experience; and the pupils' family Index of Social Position. A multi-variate, uni-variate analysis of variance computer program designed by Dr. Charles Hall, "Project Talent," was adjusted in view of population disproportionality and the statistical design of the study after some population sampling reduction procedures. Intercorrelation among the normal equation coefficients was below the critical level, thus ensuring correction for cell disproportionality.

The variables were selected for preliminary statistical analysis of the pupil population in view of their considered effect on pupil achievement at the end of first grade. Other pupil-teacher-school-community information gathered during the study was carefully examined and considered by the investigators. In view of observations during the study, the questionable qualitative effects of other variables, and uncontrolled unique conditions in the Pittsburgh Project, will be descriptively rather than statistically treated.

As indicated through Table 1, the check for randomization revealed that there were statistically significant differences at the .01 level between total pupils in the two instructional methods on the Thurstone-Jeffrey Test of Identical Forms, the Metropolitan Matching Subtest, the amount of pupils' pre-school experience, and the Metropolitan Copying Subtest. The means for the statistically significant variables obviously reflect, in order of their $\underline{F}$ ratio magnitude, that the pupils in the Co-ordinated Basal Language Arts Approach had a statistically significantly higher mean score on the Identical Forms Test, Metropolitan Matching Test, and had attended pre-school classes more frequently. Therefore, in these three readiness areas, before instruction, the Co-ordinated Basal Language Arts Approach groups had an advantage over pupils in the Integrated Experience Approach to Communication. As reflected at the .05 level, pupils in Method A missed statistically significantly more school days and had statistically significantly lower scores on the Murphy-Durrell Phonemes Subtest. Thus on these affective measures, pupils in the Co-ordinated Basal Language Arts Approach were statistically significantly superior. Only on the Metropolitan Copying Subtest, pupils in the Integrated Experience Approach to Communication had statistically significantly higher mean scores.

In Table 2, the significance of differences between total pupils within the three socio-economic levels are evident. At the .01 level, we may reject the null hypothesis that pupils at each socio-economic level were independently and randomly drawn from identically normally distributed populations on seventeen of the considered

TABLE 1

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF DIFFERENCE BETWEEN FIRST GRADE PUPILS WITHIN TWO METHODS

Initial Variables	Grand Mean Method A	Grand Mean Method B	F
Pupil			
1. Pupil absence	15.36	13.08	4.22**
2. Index of Social Position	73.79	73.63	.05
3. Banham Maturity Level	20.81	21.39	1.51
4. Mental age (Pintner-Cunningham)	36.67	36.25	.13
5. Chronological age	74.34	73.28	3.85
Murphy-Durrell Readiness Tests			
6. Phonemes	19.94	23.13	4.34**
7. Capital letters	18.28	18.62	.15
8. Lower letters	15.08	15.36	.03
9. Learning rate	10.00	9.94	.10
Thurstone-Jeffrey Tests			
10. Pattern copying	21.83	21.13	1.13
11. Identical Forms	15.88	18.26	12.81*
Metropolitan Readiness Tests			
12. Word meaning	8.17	8.21	.12
13. Listening	8.93	9.03	.05
14. Matching	6.97	7.91	8.71*
15. Numbers	12.06	12.86	3.30
16. Copying	8.21	7.71	7.77*
17. Alphabet	9.10	9.14	.09
18. Pupils' pre-school experience	2.78	3.04	8.10*
Teacher			
19. Teacher's degree	2.27	1.99	1.86

Total number of pupils in Method A = 252.
Total number of pupils in Method B = 252.

Method A = The Integrated Experience Approach to Communication
Method B = The Co-ordinated Basal Language Arts Approach

df for Method = 1
df for Error = 492

*Statistically significant (α = .01) = 6.66
**Statistically significant (α = .05) = 3.85

TABLE 2

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF DIFFERENCE BETWEEN TOTAL FIRST GRADE PUPILS WITHIN THREE SOCIO-ECONOMIC LEVELS

Initial Variables	Grand Mean			
	S.E.L. I.	S.E.L. II.	S.E.L. III.	F
Pupil				
1. Pupil absence	13.23	13.58	15.85	3.53**
2. Index of Social Position	40.75	77.14	103.24	1493.60*
3. Banham Maturity Level	22.67	21.13	20.50	38.90*
4. Mental age (Pintner-Cinningham)	39.53	37.29	36.66	14.64*
5. Chronological age	73.58	73.20	74.65	4.07**
Murphy-Durrell Readiness Tests				
6. Phonemes	28.24	21.80	14.57	36.98*
7. Capital letters	22.15	18.05	15.15	48.20*
8. Lower letters	18.85	14.60	12.20	45.99*
9. Learning rate	11.36	9.96	8.59	20,22*
Thurstone-Jeffrey Tests				
10. Pattern copying	23.15	21.23	20.06	7.92*
11. Identical forms	19.67	18.11	13.47	25.03*
Metropolitan Readiness Tests				
12. Word meaning	9.63	8.12	6.81	37.89*
13. Listening	9.58	9.19	8.17	11.10*
14. Matching	8.54	7.75	6.04	16.27*
15. Numbers	14.28	12.13	10.97	26.90*
16. Copying	8.94	8.17	6.78	18.58*
17. Alphabet	11.48	8.94	6.04	43.07*
18. Pupils' pre-school experience	3.04	3.00	2.69	9.94*
Teacher				
19. Teacher's degree	2.74	1.76	1.89	21.42*

Total number of pupils, S.E.L. I = 198.
Total number of pupils, S.E.L. II = 200.
Total number of pupils, S.E.L. III = 106.

S.E.L. I = upper socio-economic level.
S.E.L. II = middle socio-economic level.
S.E.L. III = low socio-economic level.

df for Socio-economic Level = 2
df for Error = 492

*Statistically significant (α = .01) = 4.62
**Statistically significant (α = .05) = 3.00

variables. On these seventeen statistically significant variables, mean scores were higher for pupils in Socio-economic Level I as compared to Socio-economic Level II. Pupils' mean scores in Socio-economic Level II were consistently higher than scores of pupils in Socio-economic Level III.

At the .05 level, statistically significant differences were observed in pupil absences and chronological age. Obviously, pupils in the lower socio-economic levels had more absences and were older chronologically.

Table 3 reflects statistically significant differences between the sexes on the Banham Maturity Level, the Phonomes Test, Capital and Lower Letters, Identical Forms, Matching, and the Alphabet at the .01 level of confidences. In each instance girls achieved higher mean scores on these variables. At the .05 level, the sexes were statistically significantly different on measures of social position and chronolgical age. The total girls came from lower mean levels of the socio-economic strata than did the boys. Yet, the girls were chronologically younger.

At the .05 level, as indicated in Table 4, there were significant second order interactions between Socio-economic Levels x Sex x Method on the Index of Social Position and the Banham Maturity Level. Figures 1 and 2 are graphic presentations of these interactions. Inspection of Figure 1 reveals non-parallelity exists for socio-economic levels in terms of sex and method. The plots indicate some parallelity between the girls in Method A and boys in Method A from low socio-economic levels to average levels and from average to high socio-economic levels for boys in Method B and girls in Method A.

TABLE 3

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF DIFFERENCE BETWEEN TOTAL GIRLS AND TOTAL BOYS

Initial Variables	Grand Mean Girls	Grand Mean Boys	F
Pupil			
1. Pupil absence	14.59	13.85	1.38
2. Index of Social Position	73.97	73.45	4.65**
3. Banham Maturity Level	21.87	20.33	39.10*
4. Mental age (Pintner-Cunningham)	37.02	35.90	1.52
5. Chronological age	73.41	74.22	4.51**
Murphy-Durrell Readiness Tests			
6. Phonemes	23.61	19.47	13.41*
7. Capital letters	19.72	17.18	27.15*
8. Lower letters	16.18	14.26	16.63*
9. Learning rate	10.04	9.90	1.11
Thurstone-Jeffrey Tests			
10. Pattern copying	21.43	21.53	.01
11. Identical forms	18.39	15.75	19.54*
Metropolitan Readiness Tests			
12. Word Meaning	8.10	8.28	.11
13. Listening	9.07	8.89	.49
14. Matching	7.90	6.98	8.26*
15. Numbers	12.54	12.38	.15
16. Copying	8.09	7.83	1.72
17. Alphabet	9.75	8.49	15.49*
18. Pupils' pre-school experience	2.93	2.89	.19
Teacher			
19. Teacher's degree	2.09	2.17	.001

Total number of girls = 256.
Total number of boys = 248.

df for Sex = 1
df for Error = 492

*Statistically significant (α = .01) = 6.66
**Statistically significant (α = .05) = 3.85

TABLE 4

SUMMARY OF UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF THE INTERACTION BETWEEN SOCIO-ECONOMIC LEVELS, SEX, AND METHOD

Initial Variables	Means of Interaction Terms (1)	(2)	(3)	F
Pupil				
1. Pupil absence	13.70	13.85	15.12	.80
2. Index of Social Position	75.43	72.80	74.60	4.08**
3. Banham Maturity Level	20.74	20.78	21.28	4.20**
4. Mental age (Pintner-Cunningham)	36.60	36.00	36.45	.25
5. Chronological age	73.16	72.35	72.91	1.52
Murphy-Durrell Readiness Tests				
6. Phonemes	22.30	20.94	21.71	.49
7. Capital letters	18.02	18.09	19.24	1.47
8. Lower letters	15.22	15.05	15.38	.10
9. Learning rate	9.88	9.88	10.15	.22
Thurstone-Jeffrey Tests				
10. Pattern copying	21.10	20.97	22.37	1.67
11. Identical forms	17.08	17.08	17.08	.001
Metropolitan Readiness Tests				
12. Word meaning	8.32	8.07	8.19	.43
13. Listening	8.98	8.97	8.99	.002
14. Matching	7.27	7.11	8.23	1.65
15. Numbers	12.04	12.56	12.56	1.32
16. Copying	7.65	8.92	8.75	1.46
17. Alphabet	8.93	8.97	9.29	.62
18. Pupils' pre-school experience	2.89	2.93	3.09	.11
Teacher				
19. Teacher's degree	2.10	2.12	2.17	.07

Total number of pupils = 504.

df for Socio-economic Level x Sex x Method = 2
df for Error = 492

*Statistically significant (α = .01) = 4.62
**Statistically significant (α = .05) = 3.00

	Low		Average		High	
Methods	Girls	Boys	Girls	Boys	Girls	Boys
A	105.21	103.33	83.20	74.12	38.35	38.50
B	101.68	102.74	73.64	77.60	41.73	44.42

Variable Means

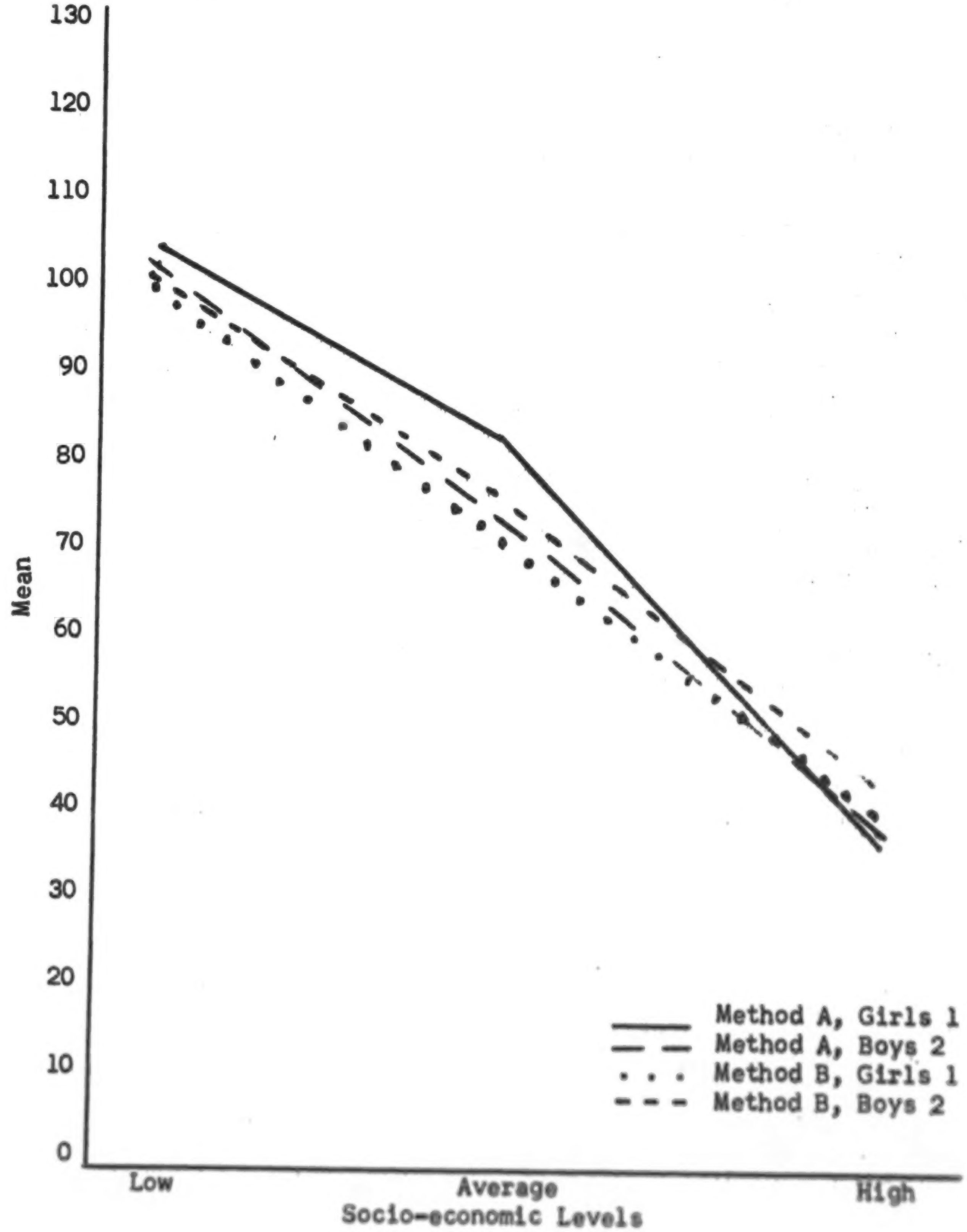

Fig. 1.--Interaction of Socio-economic Levels x Sex x Method (Variable: Index of Social Position)

Methods	Low		Average		High	
	Girls	Boys	Girls	Boys	Girls	Boys
A	20.11	16.91	21.68	20.40	23.57	22.18
B	20.32	20.65	22.16	20.28	23.38	21.56

Variable Means

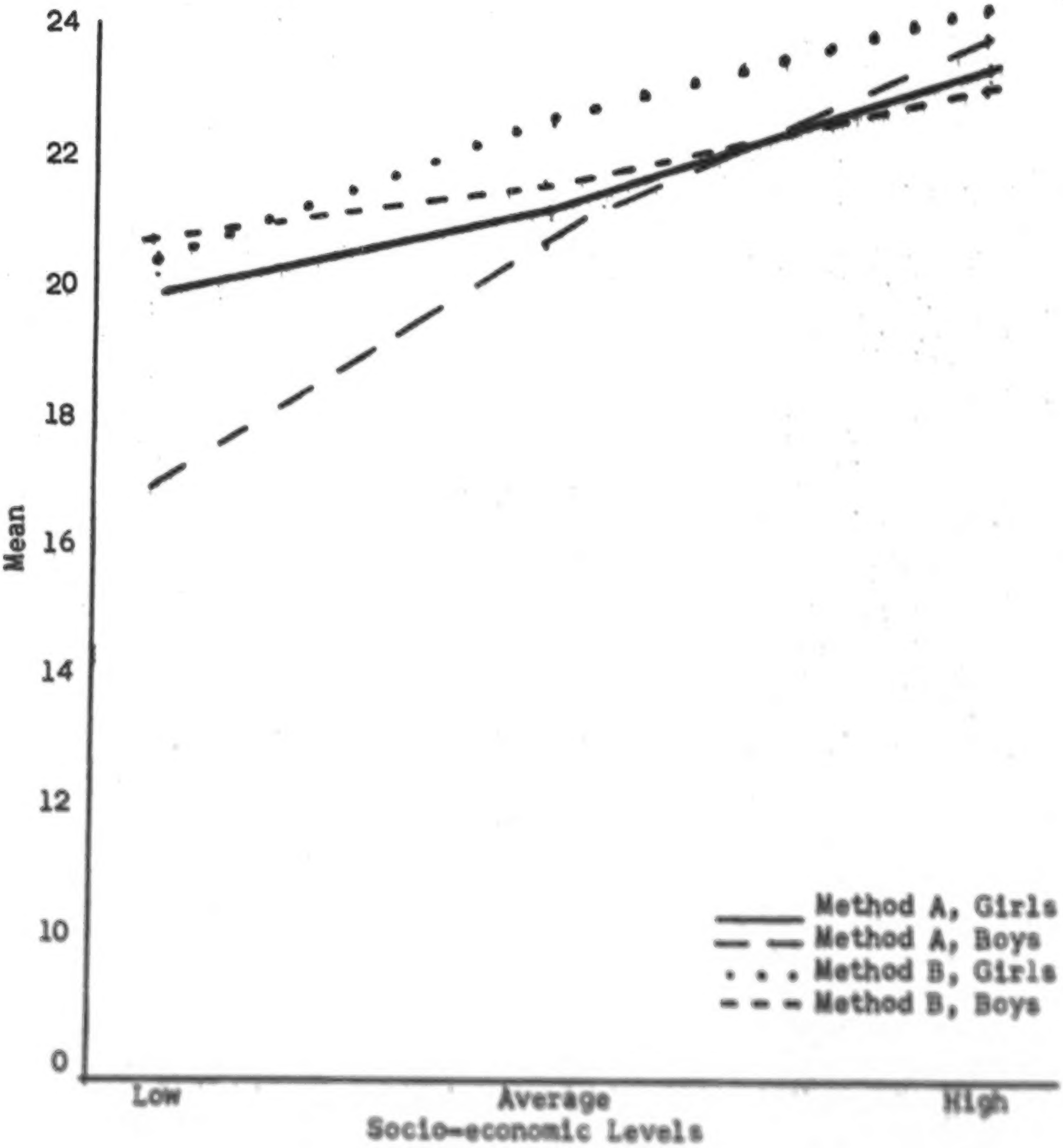

Fig. 2.--Interaction of Socio-economic Levels x Sex x Method (Variable: Banham Maturity Level)

Inspection of Figure 2 reflects some parallelity between girls in Method A and boys in Method A between average and high socio-economic levels.

As indicated in Table 5, there were significant interactions between Socio-economic Levels x Method at the .01 level on the Index of Social Position, the Banham Maturity Level, Metropolitan Copying, and the teacher's degree. At the .05 level a significant interaction of Socio-economic Levels x Method was apparent on pupils' pre-school experiences. Figures 3, 4, 5, 6, and 7 are graphic presentations of these interactions. Inspection of Figure 3 suggests non-parallelity exists for socio-economic levels in terms of method. The plots show some parallelity between Method A and Method B from low to average socio-economic levels on the Index of Social Position. Figure 4 suggests non-parallelity on the Banham Maturity Level while Figure 5 indicates non-parallelity exists between socio-economic levels and method on the Metropolitan Copying Subtest. Yet, there is some indication on the Banham variable of parallelity between average and high socio-economic levels. As indicated by Figure 6, non-parallelity is shown in teacher's degree on Socio-economic Levels x Method. Figure 7 suggests minimal parallelity between Methods A and B from low to average socio-economic levels.

At the .01 level, as demonstrated through Table 6, there is a statistically significant interaction between Sex x Method on the Index of Social Position. At the .05 level, a statistically significant interaction is apparent on the Thurstone Identical Forms. Figures 8 and 9 are graphic presentations of these interactions. In examining the

TABLE 5

SUMMARY OF UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF THE INTERACTION BETWEEN SOCIO-ECONOMIC LEVELS AND METHOD

Initial Variables	Means of Interaction Terms (1)	(2)	(3)	F
Pupil				
1. Pupil absence	13.77	13.54	15.35	1.25
2. Index of Social Position	71.31	75.15	74.67	8.69*
3. Banham Maturity Level	21.59	21.30	20.40	5.09*
4. Mental age (Pintner-Cinningham)	37.04	35.97	36.37	.49
5. Chronological age	73.63	73.45	73.27	1.31
Murphy-Durrell Readiness Tests				
6. Phonemes	22.27	22.53	19.82	1.40
7. Capital letters	18.55	18.71	18.10	.37
8. Lower letters	15.47	15.49	14.70	.65
9. Learning rate	9.78	10.29	9.83	1.09
Thurstone-Jeffrey Tests				
10. Pattern copying	21.27	21.70	21.46	.25
11. Identical forms	17.29	17.29	17.07	.17
Metropolitan Readiness Tests				
12. Word meaning	8.28	7.97	8.31	.79
13. Listening	9.03	9.07	8.84	.31
14. Matching	7.39	7.46	7.46	.03
15. Numbers	12.92	12.35	12.11	1.68
16. Copying	8.44	8.11	7.33	5.03*
17. Alphabet	9.22	9.50	8.65	1.42
18. Pupils' pre-school experience	3.02	2.97	2.75	4.37**
Teacher				
19. Teacher's degree	1.95	1.72	2.35	9.43*

Total number of pupils - 504.

df for Socio-economic Level x Method = 2
df for Error = 492

*Statistically significant (α = .01) = 4.62.
**Statistically significant (α = .05) = 3.00.

Methods	Low	Average	High
A	104.27	78.66	38.43
B	102.21	75.62	43.08

Variable Means

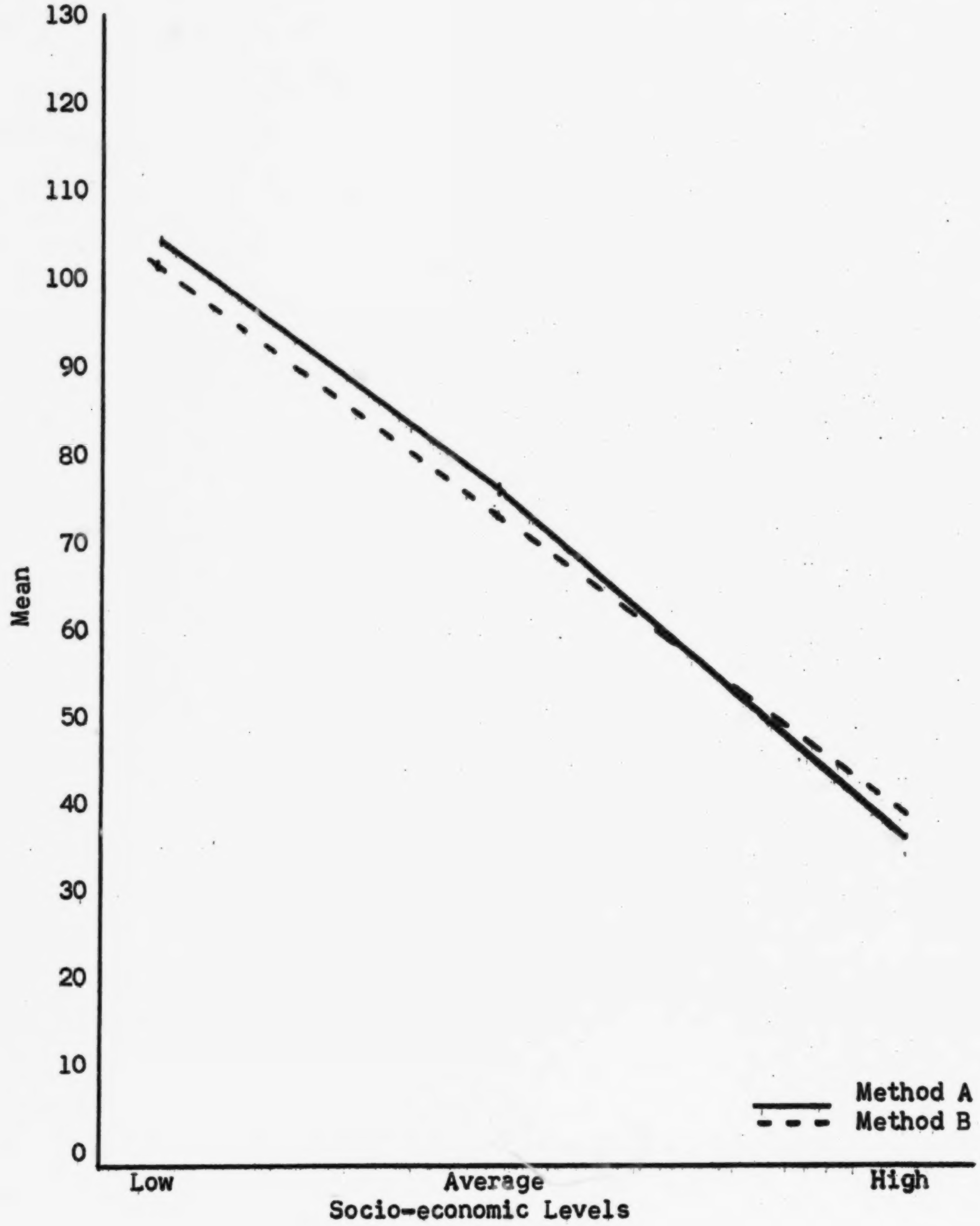

Fig. 3.—Interaction of Socio-economic Levels x Method
(Variable: Index of Social Position)

Methods	Low	Average	High
A	18.51	21.04	22.88
B	20.44	21.22	22.47

Variable Means

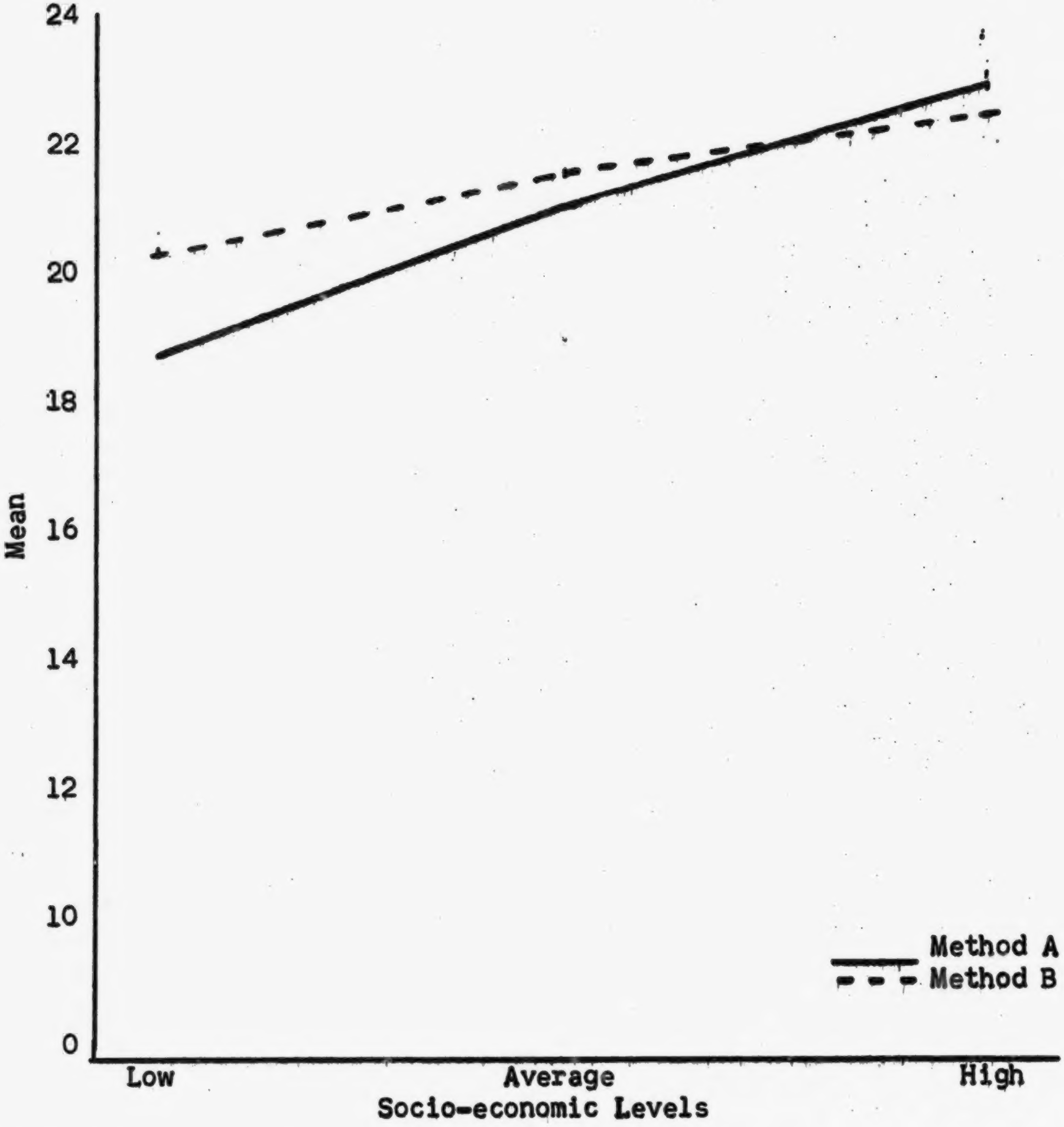

Fig. 4.—Interaction of Socio-economic Levels x Method (Variable: Banham Maturity Level)

Methods	Low	Average	High
A	6.39	8.57	9.67
B	7.15	7.76	8.20

Variable Means

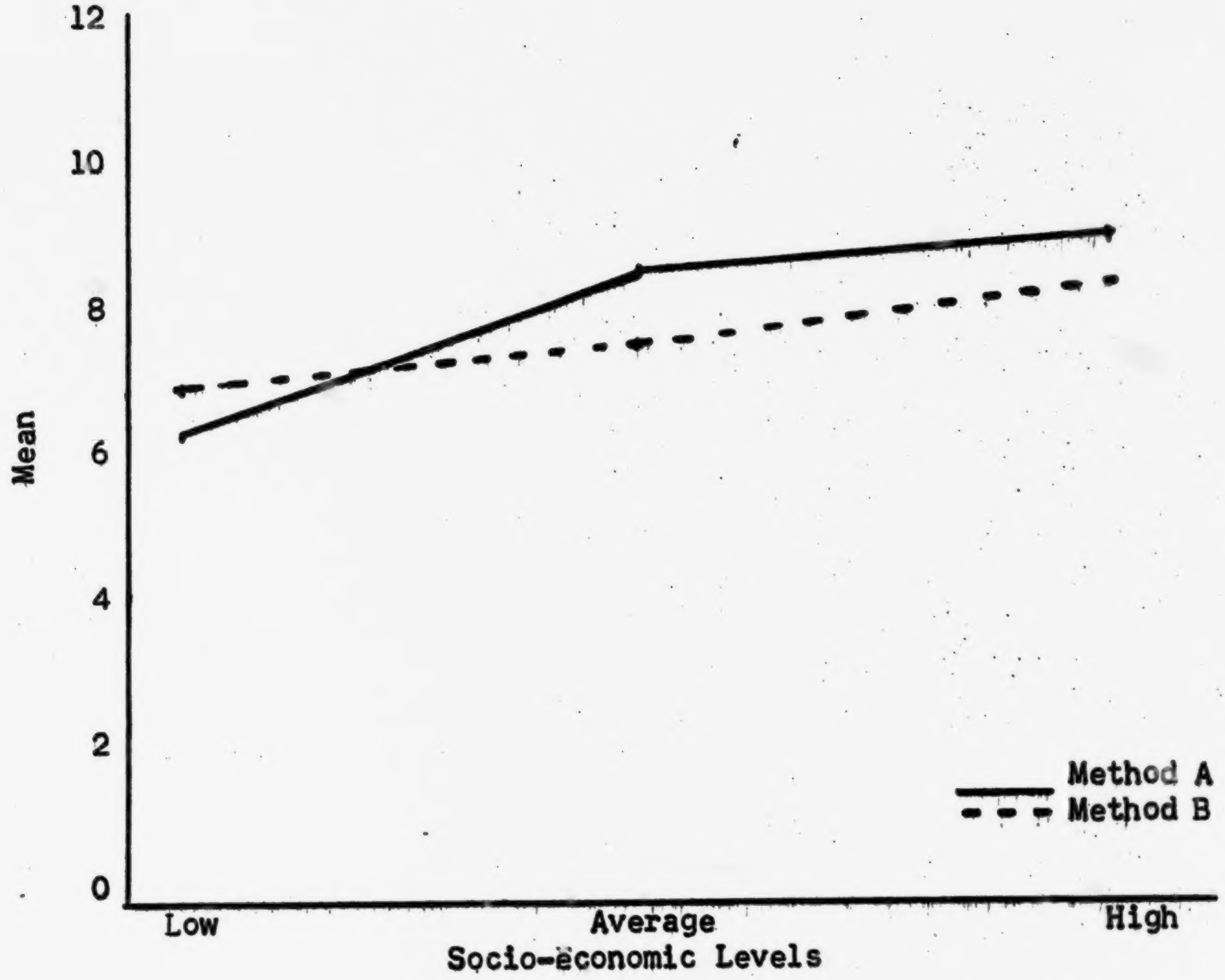

Fig. 5.—Interaction of Socio-economic Levels x Method
(Variable: Metropolitan Copying Sub-Test)

Methods	Low	Average	High
A	2.39	2.92	3.02
B	2.98	3.06	3.06

Variable Means

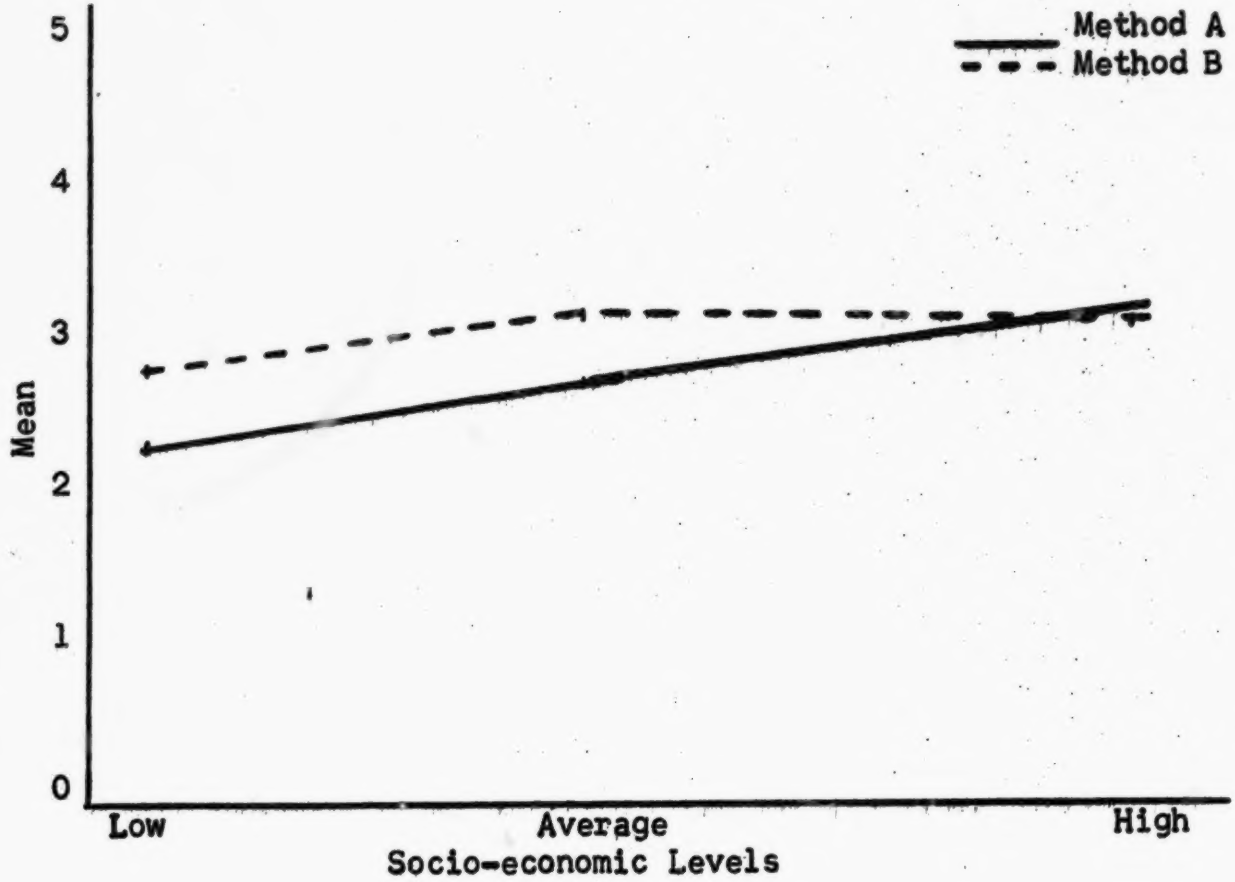

Fig. 7.--Interaction of Socio-economic Levels x Method (Variable: Pupils' Pre-school Experience Ranked Score)

TABLE 6

SUMMARY OF UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF THE INTERACTION BETWEEN SEX AND METHOD

	Means of Interaction Terms		
Initial Variables	(1)	(2)	F
Pupil			
1. Pupil absence	14.46	13.98	.001
2. Index of Social Position	75.25	72.17	13.44*
3. Banham Maturity Level	21.31	20.89	.50
4. Mental age (Pintner-Cunningham)	36.25	36.67	.29
5. Chronological age	74.07	73.55	1.32
Murphy-Durrell Readiness Tests			
6. Phonemes	21.53	21.55	.01
7. Capital letters	18.62	18.28	.01
8. Lower letters	15.19	15.25	.03
9. Learning rate	10.03	9.91	.02
Thurstone-Jeffrey Tests			
10. Pattern copying	21.08	21.88	3.67
11. Identical forms	16.26	17.88	5.63**
Metropolitan Readiness Tests			
12. Word meaning	8.24	8.14	.22
13. Listening	9.01	8.95	.09
14. Matching	7.51	7.37	.03
15. Numbers	12.52	12.40	.01
16. Copying	7.91	7.01	.33
17. Alphabet	9.14	9.10	.04
18. Pupils' pre-school experience	2.90	2.92	.003
Teacher			
19. Teacher's degree	2.06	2.20	1.18

Total number of pupils = 504.

df for Sex x Method = 1
df for Error = 492

*Statistically significant (α =.01) = 6.16.
**Statistically significant (α =.05) = 3.85.

Methods	Girls	Boys
A	75.64	71.98
B	72.35	74.92

Variable Means

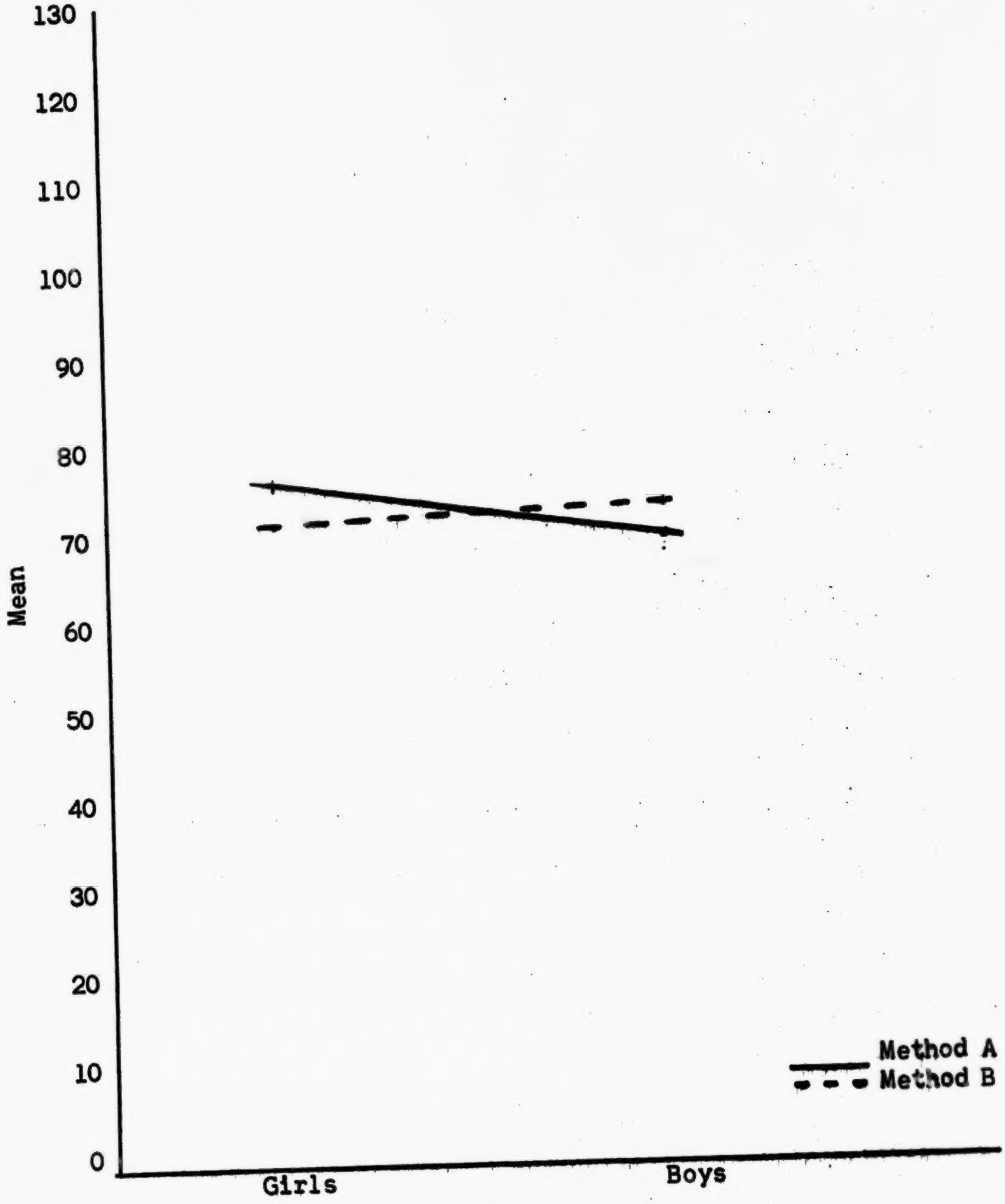

Fig. 8.--Interaction of Sex x Method (Variable: Index of Social Position)

Methods	Girls	Boys
A	16.39	15.36
B	20.38	16.13

Variable Means

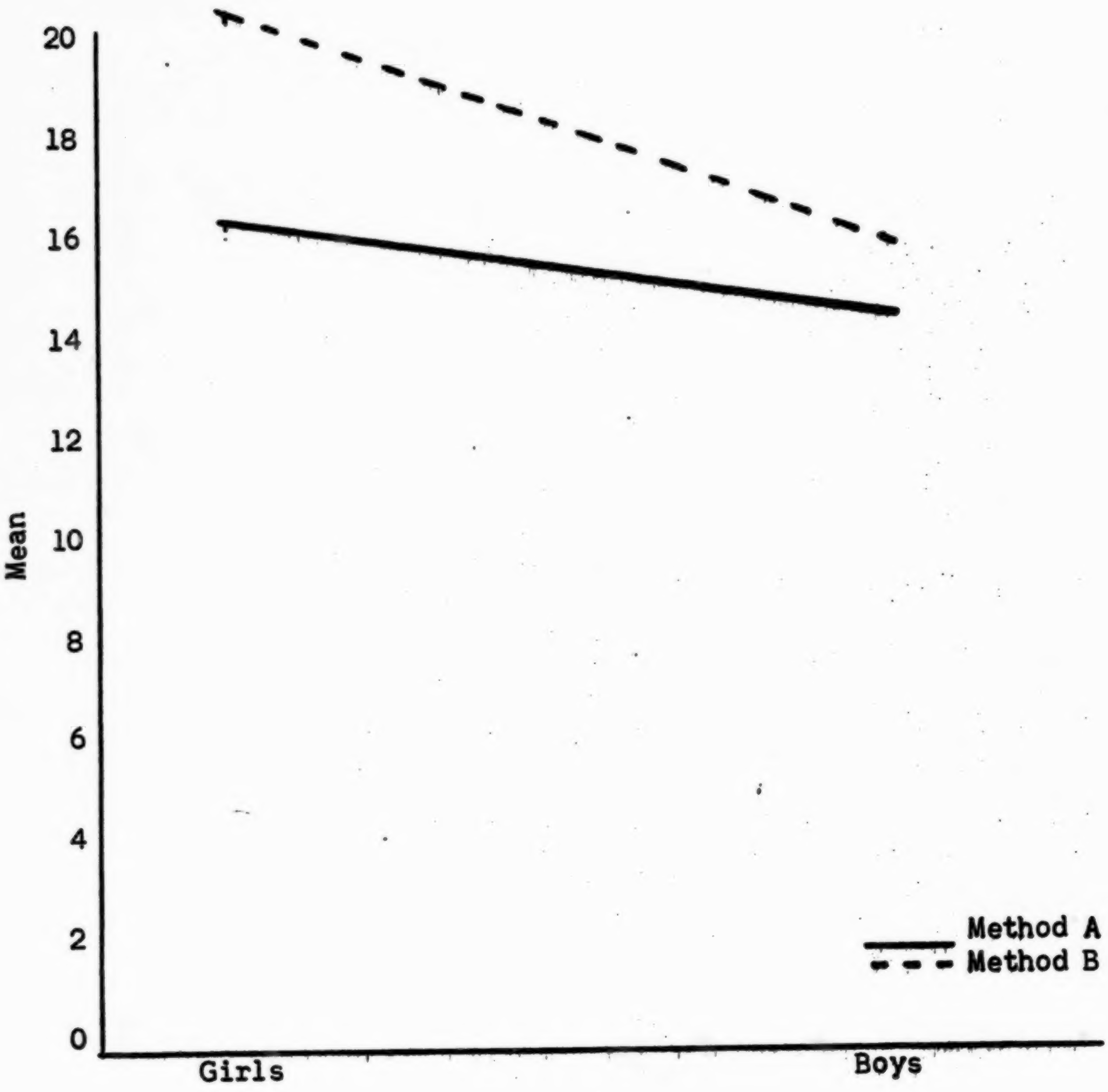

Fig. 9.—Interaction of Sex x Method
(Variable: Thurstone Identical Forms)

plots in both Figures 8 and 9, it is obvious that non-parallelity exists.

There were no significant interactions of Sex x Socio-economic Levels as presented in Table 7 at either the .01 or .05 levels.

Tables 8, 9, 10, 11, 12, and 13 more specifically indicate variable means per experimental treatment of groups.

In considering other preliminary pupil information descriptively, it was obvious that five pupils in the Co-ordinated Basal Language Arts Approach scored minimally on the Detroit Word Recognition Test. Those administered the test as prospective readers in the Integrated Experience Approach to Communication could not score at all on the measure.

From this total pupil population a sub-sample of 100 pupils was selected using a table of random numbers. These pupils were identified as representative of each treatment effect for gathering information through final individual testing procedures.

C. School and Community

The Pittsburgh Public Schools can best be described as reflecting the social and economic diversities comparable in other large urban communities. As surveyed, the median number of years of education completed by adults living within the city of Pittsburgh is 10.0. The median income representative of Pittsburgh's 604,332 residents is $5,605.

TABLE 7

SUMMARY OF UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF THE INTERACTION BETWEEN SEX AND SOCIO-ECONOMIC LEVELS

Initial Variables	Means of Interaction Terms (1)	(2)	(3)	F
Pupil				
1. Pupil absence	14.67	13.77	13.69	.28
2. Index of Social Position	72.47	74.73	73.66	2.32
3. Banham Maturity Level	21.13	21.11	21.05	.02
4. Mental age (Pintner-Cunningham)	35.04	37.08	37.26	2.25
5. Chronological age	73.94	73.52	73.96	.55
Murphy-Durrell Readiness Tests				
6. Phonemes	21.35	21.27	22.00	.11
7. Capital letters	18.71	18.30	18.34	.22
8. Lower letters	15.54	15.04	15.08	.39
9. Learning rate	10.11	10.09	9.72	.35
Thurstone-Jeffrey Tests				
10. Pattern copying	21.27	21.59	21.58	.10
11. Identical forms	17.37	17.11	16.72	.44
Metropolitan Readiness Tests				
12. Word meaning	8.29	8.07	8.21	.36
13. Listening	8.78	9.00	9.16	.89
14. Matching	6.98	7.66	7.88	2.00
15. Numbers	12.24	12.23	12.92	1.37
16. Copying	7.93	7.93	7.90	.09
17. Alphabet	8.97	9.27	9.10	.27
18. Pupils' pre-school experience	2.88	2.88	2.96	.44
Teacher				
19. Teacher's degree	2.26	2.07	2.05	1.20

Total number of pupils = 504.

df for Sex x Socio-economic Levels = 2
df for Error = 492

*Statistically significant (α = .01) = 4.62.
**Statistically significant (α = .05) = 3.00.

TABLE 8

MEANS FOR EACH EXPERIMENTAL GROUP ON PUPIL ABSENCE, INDEX OF SOCIAL POSITION, AND BANHAM MATURITY LEVELS

Methods	Socio-economic Levels		
	I.	II.	III.
A	1. a. 14.24 b. 38.35 c. 23.57 a. 13.61 b. 38.50 c. 22.18 2.	1. a. 14.59 b. 83.20 c. 21.68 a. 13.50 b. 74.12 c. 20.40 2.	1. a. 19.10 b. 105.21 c. 20.11 a. 17.15 b. 103.33 c. 16.91 2.
B	1. a. 13.12 b. 41.73 c. 23.38 a. 11.96 b. 44.42 c. 21.56 2.	1. a. 14.92 b. 73.64 c. 22.16 a. 12.02 b. 77.60 c. 20.28 2.	1. a. 12.27 b. 101.68 c. 20.32 a. 14.87 b. 102.74 c. 20.65 2.

Key:

Method A = The Integrated Experience Approach
Method B = The Co-ordinated Basal Language Arts Approach
Socio-economic Level I = High
Socio-economic Level II = Middle
Socio-economic Level III = Low

1. = Girls
2. = Boys
a. = Pupil Absence
b. = Index of Social Position
c. = Banham Maturity Levels

TABLE 9

MEANS FOR EACH EXPERIMENTAL GROUP ON MENTAL AGE, CHRONOLOGICAL AGE, AND PHONEMES

Methods	Socio-economic Levels I.	Socio-economic Levels II.	Socio-economic Levels III.
A	1. a. 38.78 b. 73.45 c. 28.64 a. 41.85 b. 74.40 c. 26.10 2.	1. a. 38.12 b. 73.28 c. 23.74 a. 35.90 b. 73.44 c. 18.64 2.	1. a. 34.14 b. 75.82 c. 13.61 a. 31.18 b. 75.61 c. 8.91 2.
B	1. a. 38.56 b. 73.15 c. 31.60 a. 38.94 b. 73.33 c. 26.62 2.	1. a. 38.84 b. 71.72 c. 23.46 a. 36.32 b. 74.36 c. 21.36 2.	1. a. 33.68 b. 72.95 c. 20.59 a. 31.17 b. 74.22 c. 15.17 2.

Key:

Method A = The Integrated Experience Approach
Method B = The Co-ordinated Basal Language Arts Approach
Socio-economic Level I = High
Socio-economic Level II = Middle
Socio-economic Level III = Low

1. = Girls
2. = Boys
a. = Mental Age
b. = Chronological Age
c. = Murphy-Durrell Phonemes

TABLE 10

MEANS FOR EACH EXPERIMENTAL GROUP ON CAPITAL LETTERS, LOWER LETTERS, AND LEARNING RATE

Methods	Socio-economic Levels		
	I.	II.	III.
A	1. a. 23.41 b. 20.04 c. 11.37 a. 20.75 b. 17.88 c. 11.03 2.	1. a. 19.00 b. 15.48 c. 10.48 a. 17.28 b. 13.98 c. 10.16 2.	1. a. 16.75 b. 12.50 c. 8.54 a. 12.52 b. 10.58 c. 8.42 2.
B	1. a. 23.93 b. 20.24 c. 11.76 a. 20.50 b. 17.27 c. 11.29 2.	1. a. 19.34 b. 15.28 c. 9.84 a. 16.58 b. 13.66 c. 9.40 2.	1. a. 15.86 b. 13.55 c. 8.27 a. 15.48 b. 12.17 c. 9.13 2.

Key:

Method A = The Integrated Experience Approach
Method B = The Co-ordinated Basal Language Arts Approach
Socio-economic Level I = High
Socio-economic Level II = Middle
Socio-economic Level III = Low

1. = Girls
2. = Boys
a. = Murphy-Durrell Capital Letters
b. = Murphy-Durrell Lower Case Letters
c. = Murphy-Durrell Learning Rate

TABLE 11

MEANS FOR EACH EXPERIMENTAL GROUP ON PATTERN COPYING, IDENTICAL FORMS, AND WORD MEANING

Methods		Socio-economic Levels		
		I.	II.	III.
A	1.	a. 23.12 b. 19.47 c. 9.65	a. 21.08 b. 17.26 c. 7.86	a. 20.93 b. 12.43 c. 6.89
	2.	a. 24.45 b. 17.83 c. 9.78	a. 22.52 b. 16.14 c. 7.92	a. 19.85 b. 12.12 c. 6.94
B	1.	a. 23.65 b. 23.02 c. 9.64	a. 21.48 b. 21.68 c. 7.96	a. 19.27 b. 16.45 c. 6.59
	2.	a. 22.37 b. 18.17 c. 9.48	a. 19.82 b. 17.36 c. 8.76	a. 20.17 b. 12.87 c. 6.82

Key:

Method A = The Integrated Experience Approach
Method B = The Co-ordinated Basal Language Arts Approach
Socio-economic Level I = High
Socio-economic Level II = Middle
Socio-economic Level III = Low

1. = Girls
2. = Boys
a. = Thurstone-Jeffrey Pattern Copying
b. = Thurstone-Jeffrey Identical Forms
c. = Metropolitan Word Meaning

TABLE 12

MEANS FOR EACH EXPERIMENTAL GROUP ON LISTENING, MATCHING, AND NUMBERS

Methods	Socio-economic Levels		
	I.	II.	III.
A	1. a. 9.49 b. 7.76 c. 14.35	1. a. 9.38 b. 7.88 c. 11.12	1. a. 8.29 b. 6.86 c. 11.14
	a. 9.68 b. 8.28 c. 14.33 2.	a. 9.10 b. 6.72 c. 12.14 2.	a. 7.67 b. 4.33 c. 9.30 2.
B	1. a. 9.44 b. 9.33 c. 13.91	1. a. 9.22 b. 8.98 c. 12.84	1. a. 8.59 b. 6.64 c. 11.86
	a. 9.71 b. 8.79 c. 14.52 2.	a. 9.08 b. 7.42 c. 12.44 2.	a. 8.13 b. 6.35 c. 11.57 2.

Key:

Method A = The Integrated Experience Approach
Method B = The Co-ordinated Basal Language Arts Approach
Socio-economic Level I = High
Socio-economic Level II = Middle
Socio-economic Level III = Low

1. = Girls
2. = Boys
a. = Metropolitan Listening
b. = Metropolitan Matching
c. = Metropolitan Numbers

TABLE 13

MEANS FOR EACH EXPERIMENTAL GROUP ON COPYING, ALPHABET, TEACHER'S DEGREE, AND PUPILS' PRE-SCHOOL EXPERIENCE

Methods	Socio-economic Levels		
	I.	II.	III.
A	1. a. 9.80 b. 11.90 c. 3.08 d. 2.98 a. 9.53 b. 11.20 c. 3.05 d. 3.05 2.	1. a. 8.30 b. 9.92 c. 1.30 d. 2.92 a. 8.84 b. 8.66 c. 1.68 d. 2.92 2.	1. a. 6.75 b. 7.43 c. 2.11 d. 2.46 a. 6.03 b. 5.45 c. 2.39 d. 2.33 2.
B	1. a. 8.25 b. 12.02 c. 2.60 d. 3.07 a. 8.15 b. 10.79 c. 2.25 d. 3.04 2.	1. a. 8.22 b. 9.56 c. 2.04 d. 3.04 a. 7.30 b. 7.60 c. 2.02 d. 3.08 2.	1. a. 7.18 b. 7.68 c. 1.45 d. 3.05 a. 7.13 b. 7.17 c. 1.61 d. 2.91 2.

Key:

Method A = The Integrated Experience Approach
Method B = The Co-ordinated Basal Language Arts Approach
Socio-economic Level I = High
Socio-economic Level II = Middle
Socio-economic Level III = Low

1. = Girls
2. = Boys
a. = Metropolitan Copying
b. = Metropolitan Alphabet
c. = Teacher's Degree (coded ranked score)
d. = Pupils' Pre-school Experience (ranked score)

The school year in Pittsburgh averages between 195 and 200 school days. Each school day begins at 8:40 a.m. and terminates at 3:30 p.m., totaling 6 hours and 50 minutes of instruction. Kindergarten instruction is also part of the educational program in the public schools.

In reviewing class size, it may be noted that classes ranged in size, in this study, from 45 to 22 pupils as recorded on May 1, 1965. Teacher-class size ratio between the two instructional approaches could not be justifiably statistically evaluated since some classes had student teachers or teacher aids. Nevertheless, in realistically reviewing these unique conditions the investigators felt that mean per class loads were comparable between the instructional approaches.

Every school in the city system was serviced by a central library structure. Only four of the twenty-four classrooms in the study did not have access to a school library. Three classes without school library facilities or permission for access were involved in the Integrated Experience Approach to Communication. Only one classroom in the Co-ordinated Basal Language Arts Approach was located in an elementary building without a library.

In order to acquaint parents with some facets of the instructional programs, research staff members participated in Parent-Teacher Association programs, upon call. Generally, parents appeared interested and receptive to the instructional plans.

D. The Teachers

Without doubt, the success or failure of first graders in a beginning reading program is crucially affected by the classroom teachers. Table 14 includes pertinent data concerning teachers participating within each instructional approach. As indicated, teachers in the Co-ordinated Basal Language Arts Approach were older, had more years of total experience and first grade experience, and had fewer children.

Table 15 reveals that in overall competence ratings between teachers there were no statistically significant differences between the methods at the .01 or .05 levels of confidence. In evaluating teacher competencies, it was evident that the participating teachers represented a range of competency in both approaches from poor to superior. There were no statistically significant differences in teacher absence. There was no teacher attrition.

Teacher attitudes were also carefully considered as the investigation progressed. The teachers in the Co-ordinated Basal Language Arts Approach were eager and receptive to new materials and procedures. Until about February of the school term, teachers in the Integrated Experience Approach to Communication reflected doubts about their successes and the approach itself. Though the San Diego Teachers Attitude Inventory was administered, the investigators observed teachers responded as they felt they should be expected to respond within the instructional approach categories. Therefore, the invalidity of the results precludes value in reporting them.

TABLE 14

PERTINENT DATA ABOUT PARTICIPATING TEACHERS

Teacher	Age	Highest Degree	Type of Certification	Total Years of Experience	Total Years of First Grade Experience	Marital Status	Number of Children
The Integrated Experience Approach to Communication							
1	37	B.S.+	Perm.	7	4	S	-
2	42	M.Ed.+	Perm.	9 1/2	7 1/2	M	3
3	33	M.Ed.	Perm.	12	12	S	-
4	34	B.S.+	Perm.	13	13	M	-
5	52	M.Ed.+	Perm.	15	9	M	-
6	28	M.Ed.	Perm.	8	8	S	-
7	53	B.S.+	Perm.	10	8	M	3
8	48	M.Ed.+	Perm.	27 1/2	14 1/2	M	-
9	53	B.S.	Perm.	29	20	M	-
10	34	B.S	Perm.	5	1/2	M	2
11	64	-B.S.	Perm.	42	22	S	-
12	46	B.S.	Perm	12	7	M	-
Mean	38			15.8	10.5		.9

TABLE 14—Continued

Teacher	Age	Highest Degree	Type of Certification	Total Years of Experience	Total Years of First Grade Experience	Marital Status	Number of Children
The Co-ordinated Basal Language Arts Approach							
13	48	M.Ed.+	Perm.	28	21	S	-
14	57	B.S.+	Perm.	21	14	M	2
15	28	M.Ed.	Perm.	7	7	M	-
16	48	M.Ed.	Perm.	25	22	S	-
17	35	B.S.+	Perm.	5	5	M	1
18	56	B.S.	Perm.	33	8	M	-
19	45	B.S.+	Col. Provis.	7 1/2	3	M	2
20	53	B.S.	Perm.	29	23	M	-
21	45	M.Ed.+	Perm.	12	12	S	-
22	23 1/2	B.S.+	Perm.	2 1/2	2 1/2	M	-
23	59	M.Ed.	Perm.	39	39	S	-
24	53	M.Ed.	Perm.	28	20	M	1
Mean	45.9			18.1	14.7		.5

TABLE 15

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR
TESTING THE SIGNIFICANCE OF DIFFERENCE
BETWEEN TEACHERS IN TWO METHODS

Variable	Grand Mean		F
	Method A	Method B	
Teacher			
1. Absence	3.76	4.00	.93
2. Rating of Overall Competence	2.87	3.21	3.66

Method A = Integrated Experience Approach to Communication
Method B = Co-ordinated Language Arts Approach
*Statistically significant ($\alpha = .01$) = 6.70
**Statistically significant ($\alpha = .05$) = 3.85

E. Supervisory and Teacher Education Activities

At the beginning of the research study and continuing throughout, in-service meetings were scheduled for all twenty-four participating teachers and their supervisors. Supervision, classroom visitation, and consultation services were also available to the twenty-four first grade teachers. These services were provided by the research staff of the University of Pittsburgh as well as supervisory staff of the Pittsburgh Board of Public Education. The twelve teachers using the Co-ordinated Basal Language Arts Approach as well as the twelve teachers employing the Integrated Experience Approach to Communication were introduced to materials they had not used before. Thus, we hoped to reduce and balance the possible Hawthorne effect produced when teachers become enthusiastic about new materials.

Prior to the outset of the instructional program, the attention of all twenty-four teachers was directed toward common desired language outcomes for first graders. These were charted, discussed at preliminary in-service meetings, and provided to all participating teachers (see Appendix A). Though materials, procedures, and approaches were different, instructional goals were commonly defined to assure justifiable final assessment for both experimental groups in all language learning aspects.

Teachers in both the Co-ordinated Basal Language Arts Approach and the Integrated Experience Approach to Communication were given some assistance in interpreting the preliminary test results. This information was intended as an initial diagnostic assessment of pupils' strengths and needs. Accordingly, recommendations for initially individualized instruction were given.

In-service meetings for teachers were scheduled on an average of once per month as the investigation progressed. These were planned and executed by the staff at the University of Pittsburgh, by Miss Edna Mae Bruggeman, Area Scott Foresman Language Arts Consultant, and by supervisory personnel in the Pittsburgh Public Schools. The teachers attended sessions as a total group as well as sessions designed to help them with their respective instructional approach.

Common workshop discussion topics for all teachers included some of the following:

1. Individualizing pupil's instruction
2. Extending pupils' literary appreciation and interest for independent reading activities

3. Worthwhile individualized seatwork activity
4. Reading processes for pupils
5. Suggested procedures for extending listening, speaking, and written expressional skills
6. Reporting to parents
7. Standardized and informal pupil evaluation

Other workshop topics, within each instructional approach, were specifically related to understanding and execution of the respective method. For example in the Integrated Experience Approach to Communication group sessions, teachers were guided in employing directed reading activity procedures using individualized instructional charts and tradebooks. In the Co-ordinated Basal Language Arts Approach group sessions, teachers were given much direction in the analysis of pupil responses in skills areas using structured commercially prepared materials.

As the investigators worked, also, with the various supervisory personnel it was obvious that a teacher's attitudes and successes were highly related to the attitudes of her supervisors, particularly the building principal.

F. Methods and Materials

Teachers employing the Co-ordinated Basal Language Arts Approach were provided with all of the materials that comprise the Scott Foresman "Listen, Speak, and Write" language arts program as well as the new Multi-Ethnic Basal Reader program. They were also encouraged to use enrichment materials including: library books and trade books, self-directive, self-corrective materials, filmstrips, tape recorders, etc., as much as possible. It was recommended, too, that organization be as flexible as possible providing pupils with instruction through whole class, small group, and individual teacher-pupil procedures. Approximately three hours of instruction comprised the total language allotment per classroom daily equal to the time allotment per classroom in the Integrated Experience Approach to Communication.

More specifically, each instructional group in reading worked separately with the teacher in a reading circle. Teachers followed instructional sequences and directed reading activity procedures suggested in the accompanying teacher's manuals for both basal and supplementary materials. Pupil recreational reading was encouraged also. Classroom libraries, school libraries, and central city library facilities were available to most of the teachers. Pupils were provided guidance, too, as they began reading experiences in other content areas.

Listening, oral expressional, and written expressional activities were planned and executed by the teachers. Teachers were asked to rely on basal language arts manuals and materials for introducing and reinforcing language skills. Instruction in reading, listening, speaking, and writing was co-ordinated to the degree suggested in the Scott Foresman program and in accord with each teacher's ingenuity.

In order to qualify organizational procedures, instructional methods, and teaching materials a spiral guide to a developmentally defined curriculum for the Integrated Experience Approach to Communication was prepared for teachers employing the approach. The curriculum guide was designed in accord with the structural basis of the approach and its workable equation. Attention was directed to the implementation of developmentally defined experiences for pupils in the acts of communication. Some methodological stability was thus ensured as each teacher referred to the "I.E.A.C. (Integrated Experience Approach to Communication) Guide" (see Appendix B).

The first major section of the "I.E.A.C. Guide" contains information related to the theoretical basis of the approach, general implementation and organizational procedures, expected instructional outcomes for primary and intermediate grade levels, as well as previews of the six distinct topical interest areas serving the extension of pupils' experiences. Each topical interest area is developed, more specifically, as a unit theme in the second major section of the Guide. For example, Level I, Topical Interest (the first unit for first grade is titled, "Is It You?"). In this unit, focus is placed upon recognizing and accepting the verbal repertoire each child possesses when he comes to school. Other interest areas were selected for extension at each age level.

Within each topical interest area unit, the following subsections are provided:

1. An introductory description of the total unit perspectus;
2. Specific listings of instructional outcomes that seem feasible;
3. Suggestions to teachers for initial introduction of the unit as well as for maintaining pupil motivation;
4. Optional suggestions for multi-leveled, multi-dimensional communication experiences through which charted instructional outcomes might be appropriately encouraged and

selected for the whole class, small group, or individual pupils (teachers were urged to employ their ingenuity and may substitute a personally devised procedure to facilitate a timely pupil language experience and favorable communication learning outcomes);

5. Suggested measures and means of determining pupil progress such as: informal group inventories of communication understandings and skills; an individual pupil charting of interest extension titled "My Rainbow of Interest," and listed criteria for evaluating pupil proficiencies in specific language activities such as story telling;
6. A preselected and evaluated, bibliographical listing of sources and materials for the teacher and trade books for pupils that support interest extension in each unit theme (teachers were provided with the trade books as listed);
7. An appendix of assorted materials such as: suggested guidelines for constructing experience charts, comprehension question guides for evaluating pupils' creative and critical reading of trade books, lists of common basic reading words for teacher reference, suggested directed reading activity procedures in utilizing individually prescribed materials for teaching, and preselected related commercial monographs for teachers.

Initially, procedural implementation of the I.E.A.C. by teachers involved numerous opportunities for pupils to perceive, listen, and interact orally. As pupils expressed themselves, teachers began to record and chart dictation. Varieties of dictated charts, with pupils' natural language patterns retained, served in the development of auditory-visual-discriminative abilities, directional motor abilities, a basic sight vocabulary, phonetic application, comprehension abilities, and oral reading skills. A transition from initial reading of chart stories to instructional reading in trade books occurred as each child reached a primer instructional level. As a pupil became more adept at producing creative writing independently, those products were employed in eliciting skills generalizations. Application followed, too, as pupils read in trade books. Generally, the instructional materials employed in fostering pupil language growth also included suggested varieties of audio-visual or kinesthetic materials. Materials were used within the framework of large group, small group, and individual or paired pupil instructional organization. Provisions were made, thusly, in establishing common pupil purposes for learning, meeting pupils' unique needs, or fostering pupils' specific language aptitudes.

The last major section of the instructional guide is labeled "A Year in Perspective." In this portion of the guide, teachers were encouraged to reconsider personal successes, attitudes, and individuality in instructional implementation. This final note of introspection was included for teachers to constructively re-evaluate themselves and hopefully gain educational insights to be subsequently applied.

In full view of the descriptions of the experimental approaches, the investigators noted that the cost of materials per approach were basically equivalent. Furthermore, an attempt was made to carefully consider the differences that existed between the theoretical bases and applications of each proposed method. These differences are as follows:

1. In the Co-ordinated Basal Language Arts Approach initial pre-determined vocabulary words were closely controlled and repeated. Initial instruction in the Integrated Experience Approach involved use of oral-aural vocabularies of pupils with natural repetition and extension through additional experience.

2. In the Co-ordinated Basal Language Arts Approach, language skills were introduced in learning sequences suggested by teachers' manuals. Sequential introduction of skills in the Integrated Experience Approach to Communication included utilization of pupils' experience stories and suggested unit techniques and materials for integrating learning in listening, speaking, writing, and reading.

3. More frequent use was made of pupil conference techniques in the Integrated Experience Approach to Communication. Pupil-teacher conferences in the Co-ordinated Basal Language Arts Approach were incidentally incorporated.

4. Greater use was made of trade books, supplementary materials, and pupil-teacher prepared materials in the Integrated Experience Approach to Communication for directed language arts instruction.

G. Measurement Instruments

Since the findings in this study must be considered with reference to the instruments of measurement employed, the following are descriptions of instruments found in Appendix C that were used in the initial and final data collection. The measurement instruments are classified into two categories: those which were selected and utilized co-operatively throughout the twenty-seven co-ordinated studies of beginning reading and those which were unique to the Pittsburgh Project.

1. Measurement Instruments Unique to the Pittsburgh Project for Initial Data Gathering

Two unique initial evaluative instruments were selected. Described briefly are the Individual Record Check List--Maturity Level for School Entrance and Reading Readiness for Kindergarten and First Grade by Katharine Banham and the Hollingshead and Redlich Index of Social Position.

a. Individual Record Check List--Maturity Level for School Entrance and Reading Readiness. The Banham Inventory[1] consists of a total of twenty-five items on a check list under these categories: Bodily Coordination, Eye-Hand Coordination, Speech and Language Comprehension, Personal Independence, and Social Cooperation. The twenty-five categorized items are brief evaluative statements for assessing maturity. Information yielded by this measure in effect reinforced information obtained on the standardized readiness test.

The items were selected from the Gessell Developmental Schedules, Vineland Social Maturity Scale, Oseretsky Tests of Motor Proficiency, Goodenough Drawing Test, and others with slight modifications. The coefficients of stability for first grade children ranged from

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[1] Katharine Banham, Manual of Directions for Maturity Level for School Entrance and Reading Readiness (Minneapolis: Educational Test Bureau, 1959).

+.58 to +.85 with a mean of +.69. Readiness Rating Tables are provided for estimation of readiness to enter first grade and readiness for reading.

b. Hollingshead and Redlich Index of Social Position. As suggested by Hollingshead and Redlich,[1] the Index of Social Position computed in this study is based on the family's address, the father's occupation, and the years of school completed by the father. Scaled scores for each aspect of the Index total score was assigned and multiplied by the following suggested weights: address scaled score x 5, occupational scaled score x 6, and educational scaled score x 9. A total score was obtained by adding the three weighted scores. A score of "20" represented the upper limits of the upper socio-economic level. A score of "134" represented the lower limits of the lower socio-economic level.

Information about the child's father's education and child's father's occupation was obtained from official school records. In order to assess residence score, the investigators used a photographic residence scale map of the city of Pittsburgh. The map was prepared by Dr. Robert Smith, Assistant Professor of Special Education and Rehabilitation. Because of the apparent diversity of dwelling ratings within a city block in Pittsburgh, the map included a color coded per dwelling, per block rating.

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[1] August B. Hollingshead and C. Redlich, Social Class and Mental Illness (New York: John Wiley and Sons, 1958), p. 387.

2. Common Measurement Instruments Selected for Initial Data Gathering

Initial measurement instruments common to all participating in the Co-operative Studies of Beginning Reading Instruction were the Pintner-Cunningham Primary Test, Form A; the Detroit Word Recognition Test, Form B; Murphy-Durrell Diagnostic Reading Readiness Test; Metropolitan Readiness Tests, Form A; and the Thurstone-Jeffrey Tests of Identical Forms and Pattern Copying.

a. Pintner-Cunningham Primary Test, Form A (Pintner General Ability Tests—Revised). The Pintner-Cunningham Primary Test is designed for children in kindergarten, first, and the first half of second grade. It is divided into the following seven subtests: (1) Common Observation, (2) Aesthetic Differences, (3) Associated Objects, (4) Discrimination of Size, (5) Picture Parts, (6) Picture Completion, and (7) Dot Drawing. Test validity and reliability for the revised form had not yet been completed at the time the instrument was used in this investigation. Newly revised tables of norms were provided and subsequently revised.

b. Detroit Word Recognition Test, Form B. This instrument was used to initially identify children who might exhibit some word recognition skills before formal instruction in first grade. The 1953 revision contains forty picture-word association tasks. Only raw score totals were computed. The test contains many pictures that are clearly outdated.

c. Murphy-Durrell Diagnostic Reading Readiness Test, Revised Edition. The Murphy-Durrell Tests were employed for initially assessing a pupil's word-element perception abilities. This test is divided into the following parts: (1) identification of phonemes in spoken words, (2) identification of capital and lower case letters by name, and (3) learning rate for words. Since the instrument was an experimental edition, raw scores were obtained but normative data and validity-reliability coefficients were not provided.

d. Metropolitan Readiness Tests, Form A. In this investigation, the 1964 Standardization Edition of the Metropolitan Readiness Tests was employed. The test was comprised of the following six subtests: (1) Word Meaning, (2) Listening, (3) Matching, (4) Alphabet, (5) Numbers, and (6) Copying. Most of the technical data presented in the manual could best be described as tentative at the time this measure was administered.

e. Thurstone-Jeffrey Tests of Identical Forms and Pattern Copying. These tests were designed for experimental use in the "First Grade Reading Study." A manual of directions for administering and scoring the test was available. No additional technical information about either instrument was provided.

3. Measurement Instruments Unique to the Pittsburgh Project for Final Data Gathering

In assessing aspects of language development, creativity, intelligence, and social integration the following unique instruments were used: University of Pittsburgh Diagnostic Rating of Language Outcomes for First Graders, 1965; Task 1: Figure Completion and Task 3: Product Improvement, Abbreviated Form VII, Minnesota Tests of Creative Thinking; Pupil Social Integration Measure, University of Pittsburgh, 1965; and the Stanford-Binet Intelligence Test, Form L-M, 1960.

a. University of Pittsburgh Diagnostic Rating of Language Outcomes for First Graders, 1965. This instrument was designed in order to elicit teachers' assessments of pupils' performances in language arts areas not measured with the standardized instruments employed. The rating key indicates the level of pupil achievement. Categories II and III are attempts to evaluate pupils' applications while Category III was formulated to evaluate pupils' personal responses reflecting attitudes or appreciations. An examination of the intercategory correlations reveals that consistently .83 to .88 correlations occur between the categories representing understandings, habits, and abilities. The relationships between these categories, I, II, III and Category IV, personal responses, ranges from .29 to .31. Intercorrelations between the subsections of this measure and subsections of the Stanford Achievement Test ranged from .43 to .63.

b. Task 1: Figure Completion and Task 3: Product Improvement, Abbreviated Form VII, Minnesota Test of Creative Thinking. The Figure Completion Test, Task 1, included ten abstract figures that all of the pupils in this investigation were asked to finish. Each test product was evaluated in view of its qualities of fluency, flexibility, elaboration, and originality. A complete but complex scoring guide was available. A composite score for each pupil's quality response was determined by a jury of three evaluators.

The Product Improvement, Task 3, was administered to the pupil sub-sample individually. Pupil responses were elicited orally and recorded by the examiner. Ratings for fluency, flexibility, elaboration, and originality were also given by a jury of evaluators.

Interscorer reliability on the Product Improvement Task ranged from .87 to 1.00. Test-retest reliability was .69, .64, and .61.

Considerable work remains in refining and validating these scales.

c. Pupil Social Integration Measure, University of Pittsburgh, 1965. The investigators made an attempt to measure the pupils' social awareness by constructing a six item task response. Raw scores for this measure were obtained by adding correct scores for the least and most desirable response per item. Each item was read aloud by the teacher as she directed pupils in marking their responses. Because the scoring of this instrument became questionable, the comparative intercorrelations and pupil comparisons by method were eliminated.

d. Stanford-Binet Intelligence Test, Form L-M, 1960. The Stanford-Binet Intelligence Test was administered individually to the sub-sample pupil population of 100. As indicated in the test manual, the "organization of intelligence" measured by the test can be described in terms of general, group, and specific factor loadings.

4. Common Measurement Instruments Selected for Final Data Gathering

Final measurement instruments common to all participating in the Co-operative Studies of Beginning Reading Instruction were the Stanford Achievement Test, Form X, Primary I Battery, 1964; Gates Word Pronunciation Test, 1953; Karlsen Phonemic Word Test, 1954; Fry Phonetically Regular Words Oral Reading Test, 1964; Gilmore Oral Reading Test, Form A, 1951; San Diego Pupils' and Teachers' Attitude Inventories; and the Restricted Stimulus Measure of Creative Writing.

a. Stanford Achievement Test, Form X, Primary I Battery, 1964. The Stanford Achievement Test, Primary I Battery was designed for the middle of grade one to the middle of grade two. The following subtests are included: word reading, paragraph meaning, vocabulary, spelling, word study skills, and arithmetic. Test subsection reliability for grade one ranges from .79 to .95. Assurance of complete content validity, as yet, remains questionable. Normative sampling for standardization procedures are carefully described in the test manual.

b. Gates Word Pronunciation Test, 1942. This test was administered using the examiner's card, preferably. A pupil's score is represented by the number of correct responses. Normative raw score, grade score data were available in the manual of directions.

c. Karlsen Phonemic Word Test, 1964. The Karlsen Test was experimentally designed for the first grade studies. This test consisted of forty words which pupils were asked to read out loud. Each pupil was asked to continue until he missed five consecutive words. Normative data and data related to coefficients of reliability and validity were not provided.

d. Fry Phonetically Regular Words Oral Reading Test, 1964. An experimental copy of this test was administered to the pupil subsample in this study. The test consists of thirty words which each child was asked to attempt to read orally. No manual or validity-reliability data were provided.

e. Gilmore Oral Reading Test, Form A, 1951. This test was designed for measuring aspects of oral reading accuracy, comprehension, and rate. Ten gradated paragraphs were employed to evaluate oral reading competencies and to assess difficulties. This test was individually administered to the population sub-sample. Technical data were available in test manuals.

f. San Diego Pupils' and Teachers' Attitude Inventories. These experimental inventories were administered to all participating teachers and pupils. As evidenced in comparisons of teacher attitude and their overall competency ratings, relationships ranged from .04 to -.28. This was merely indicative of the doubtful worth of the teacher's inventory.

Yet, the San Diego Pupils' Attitude Inventory offered some discriminative elements. Correlations between the San Diego Attitude Inventory and subtests of the Stanford Achievement Tests range from .09 to .76 (word study).

g. Restricted Stimulus Measure of Creative Writing. Correction procedures for obtaining a restricted stimulus measure were provided by Dr. John Manning, University of Minnesota. The following aspects of creative writing were evaluated: a mechanics ratio of capitalization, punctuation, and indentation; total words spelled correctly; and total running words. No standardization or reliability-validity data were provided for this measure.

H. Research Design and Statistical Strategy

As indicated in Section III B of this report, at .01 and .05 levels of confidence, statistically significant differences existed between the pupils in the proposed methods before instruction began in first grade. On six of the seven statistically significant variables, pupils assigned to the Co-ordinated Basal Language Arts Approach had mean scores revealing an initial instructional advantage over pupils in the Integrated Experience Approach to Communication. Because of these pupil-teacher differences, the investigators began to employ multi-variate analyses of variance recombination analyses techniques. The investigators hoped to examine the effects of co-variance on the initial pupil-teacher variables. It was also expected that multi-variate recombination analyses would yield some assurance of adequacy and accuracy in selecting covariates for final data analysis.

Variables were selected as covariates in the order of their F ratio magnitude from highest to lowest. Table 16 indicates changes in F ratio magnitude as the recombination analyses progressed. This procedure was time consuming and costly but raised some questions about the feasibility of covariance procedures in this investigation. In examining the effects of covariance on initial pupil-teacher variables, it was evident that initial pupil-teacher differences between the methods became greater as combinations of covariates were employed. Using five covariates, statistically significant differences, at .01 and .05 levels respectively, were apparent in thirteen of the variables. Covariance, thus, seemed to enhance pupil diversity rather than yield a combination of variables that might statistically control the effects producing initial differences. At this point, multi-variate recombination procedures in this general linear hypothesis model were terminated. Continued exploration of multi-variate analyses was deemed presently unfeasible and beyond the budgetary and time limitations of this investigation.

TABLE 16

UNIVARIATE AND MULTIVARIATE F RATIOS FOR THE RECOMBINATION ANALYSES OF INITIAL VARIABLES FOR METHOD

Variable	Univariate F Ratios--Recombination Analysis					
	Covariates					
	0	1	2	3	4	5
1. Index of Social Position	.05	.008	.08	.05	.84	3.83
2. Banham Maturity Level	1.51	.23	.07	6.06**	.53	1.07
3. Mental age (Pintner-Cunningham)	.13	.35	.55	8.41*	7.92*	13.97*
4. Chronological age	3.86	4.60**	3.70	9.13*	8.08*	9.30*
Murphy-Durrell Readiness Tests						
5. Phonemes	4.34**	1.87	2.82	.14	1.50	16.89*
6. Capital letters	.15	.15	.74	4.52**	2.64	11.70*
7. Lower letters	.03	.27	.73	6.47**	4.60**	21.33*
8. Learning rate	.10	.32	.24	2.61	4.49**	21.89*
Thurstone Jeffrey Tests						
9. Pattern copying	1.13	.81	.99	.36	9.22*	9.54*
10. Identical forms	12.81*	12.37*	9.10*	5.54**	5.99**	3.85**
Metropolitan Readiness Tests						
11. Word meaning	.12	.10	.53	1.68	3.42	30.29*
12. Listening	.05	.003	.17	1.22	2.73	7.43*
13. Matching	8.71*	10.26*	9.23*			
14. Numbers	3.31	1.19	.85	.21	.46	9.01*
15. Copying	7.77*	7.14*	8.37*	13.83*	23.12*	
16. Alphabet	.09	.27	.60	5.51**	7.70*	22.48*

TABLE 16--Continued

Variable	Univariate F Ratios--Recombination Analysis					
	Covariates					
	0	1	2	3	4	5
17. Pre-school experience	8.10*	9.02*	5.60**	94.84*		
18. Teacher's degree	1.86	1.04	2.82	.10	3.27	4.30**
19. Teacher's total years experience	10.93*	17.44*				
20. Teacher's years of first grade experience	38.04*					
Multivariate F Ratio	6.38*	4.45*	3.63*	13.07*	43.24*	48.94*

*Statistically significant (α = .01) = 6.66, univariate.
**Statistically significant (α = .05) = 3.85, univariate.

(Blank spaces indicate when a variate becomes a covariate.)

*Statistically significant (α = .01) = 1.92; (α = .05) = 1.60, multivariate.

Therefore, final data analysis is reported in view of only univariate analysis of variance using "3 x 2 x 2" factorial designs as follows: Socio-economic Level x Method x Sex, and Mental Age Levels x Method x Sex. In view of the multi-variate recombination analyses findings, covariance procedures were not employed for this report.

The following is a list of statistical programs used in data purification and data analysis:

1. Fortran Program for Checking and Purifying Data—Dr. William Asher, University of Pittsburgh.
2. Fortran Program for Checking Numerical Sequencing of Pupils as Identified—Dr. William Asher, University of Pittsburgh.
3. BMDO2R—Stepwise Regression Program—Health Sciences Computing Facility, UCLA.
4. BMDO1D—Simple Data Description Program—Health Sciences Computing Facility, UCLA.
5. Multi-variate Analyses of Variance Program, General Linear Hypothesis Model—Dr. Charles Hall, Project Talent—University of Pittsburgh. (This program yields both multi-variate and univariate analyses.)

Keypunching and verification of all data cards and all data analysis was performed at the Computation and Data Processing Center, University of Pittsburgh. Data processing involved use of the 7090 IBM Electronic Computer Model.

The basic statistical assumptions underlying the analysis of variance were carefully considered. Since there were no statistically significant differences initially between pupils in the respective methods on thirteen of the initial nineteen variables considered, the hypothesis that some randomization was operational in this study cannot be rejected. Pupil proportionality for data analysis was also considered and accommodated through pupil random sampling procedures and through adjustment of the program design of effects equations. Though homogeneity of variance is desirable, Norton[1] found that a marked degree of heterogeneity of variance had a small but real effect on the F ratio distribution. Norton, however, minimizes the importance of homogeneity by concluding that an F ratio distribution is reasonably insensitive to the form of the distribution. Lindquist further states:

> . . . that the assumption of homogeneity of variance is practically never strictly satisfied in educational and psychological experiments, but that in most instances the heterogeneity is not marked. Fortunately, the form of the sampling distribution of the mean square ratio is not very markedly affected by moderate degrees of heterogeneity of variance, and hence, the F test may still be satisfactorily used in many experimental situations.[2]

Nevertheless, in most instances in this study, inspection of the standard deviations and operational statistical accommodations lent to satisfying basic statistical assumptions underlying analysis techniques. These assumptions and statistical accommodations were operational in initial and final data analysis for the total pupil population as well as for pupil sub-sample population of 101.

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[1] E. F. Lindquist, Design and Analysis of Experiments in Psychology and Education (Boston: Houghton-Mifflin Company, 1953), pp, 77-90, citing Norton.

[2] Ibid.

IV. ANALYSIS OF FINAL DATA AND FINDINGS

The analysis of final data in this chapter is organized in view of these three proposed problem areas:

a. Problem One: Analysis of the effects of socio-economic levels, methods, and sex on pupil achievement in first grade.

b. Problem Two: Analysis of the effects of mental age levels, methods, and sex on pupil achievement in first grade.

c. Problem Three: The feasibility of predictive regression analysis in first grade.

Data tabulation in this chapter is presented in the order of the three main effects and four interaction effects in Problems One and Two. Tables include those illustrating grand means and F ratios for effect. When significant interaction effects occur, descriptive analytical figures are provided. For subsequent comparisons, cell means for each experimental group are also given. To summarize the acceptance or rejection of hypothesized significance of difference, additional tables are included.

In Problem Three, data tabulation is presented in terms of population means, standard deviations, and a multiple correlation analysis.

A. Problem One: Analysis of the Effects of Socio-economic Levels, Methods, and Sex on Pupil Achievement in First Grade

The main effects and interaction hypotheses in Problem One are considered in view of twenty-six criterion variables. The first fourteen criterion variables listed involved the total pupil population. Criterion variables fifteen to twenty-six were evaluated subsequently. Only the sub-sample of population of 101 pupils were considered in these analyses.

The first main effects hypotheses for variables one to fourteen involved the comparison between total pupils in Method A, the Integrated Experience Approach to Communication and total pupils in Method B, the Co-ordinated Basal Language Arts Approach. The summary of findings in testing the effects of method is presented in Table 17. At the .01 level, there were statistically significant differences between pupils on the San Diego Pupil Reading Attitude Inventory and these subsections of the Stanford Achievement Tests: word meaning, paragraph meaning, vocabulary, and word study. In each instance, on these measures, pupils in the Integrated Experience Approach to Communication had statistically significantly higher mean scores than pupils in the Co-ordinated Basal Language Arts Approach in spite of initial comparative limitations in aspects of reading readiness. There were no statistically significant differences between pupils in the two methods on the subsections of the University of Pittsburgh Diagnostic Rating of Language Outcomes. This can be reasonably attributed to the theory that the teachers rating their pupils in the respective method had no opportunity to evaluate pupil progress in the other instructional approach. As also shown in this table, there were no statistically significant differences between pupils in Method A and Method B on the subsections of Task 1: Figure Completion, Minnesota Tests of Creative Thinking.

TABLE 17

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF DIFFERENCE BETWEEN FIRST GRADE PUPILS IN TWO METHODS ON FINAL ACHIEVEMENT DATA

Final Variables	Grand Mean Method A	Grand Mean Method B	F
1. Pupil Reading Attitude (San Diego)	18.99	17.68	16.80*
Stanford Achievement Tests			
2. Word meaning	23.75	21.59	22.91*
3. Paragraph meaning	26.43	24.39	9.99*
4. Vocabulary	24.22	21.56	19.03*
5. Spelling	14.63	15.07	.02
6. Word study	40.00	37.76	12.27*
University of Pittsburgh Diagnostic Rating of Language Outcomes			
7. Understandings	3.51	3.51	.001
8. Habits	3.18	3.16	.27
9. Skills	3.31	3.31	.08
10. Personal responses	3.39	3.41	.04
Minnesota Tests of Creative Thinking--Task 1: Figure Completion			
11. Fluency	9.92	9.96	1.26
12. Flexibility	6.66	7.42	3.41
13. Elaboration	13.02	11.88	.42
14. Originality	6.69	6.87	.002

Total number of pupils in Method A = 252.
Total number of pupils in Method B = 252.

Method A = The Integrated Experience Approach to Communication.
Method B = The Co-ordinated Language Arts Approach.

df for Method = 1
df for Error = 492

*Statistically significant (α = .01) = 6.66.
**Statistically significant (α = .05) = 3.85.

The second main effects hypothesis in this problem involved determining if there were statistically significant differences between the total pupils within Socio-economic Levels I, II, and III. As shown in Table 18, there were statistically significant differences apparent between pupils within socio-economic levels at the .01 level on the five subsections of the Stanford Achievement Test, all subsections of the University of Pittsburgh Diagnostic Rating checklist, and the Flexibility Index of Task 1: Minnesota Tests of Creative Thinking. Differences at the .05 level were noted on the Originality Index of the Minnesota Test of Creative Thinking: Task 1. When statistically significant differences were apparent, pupils in Socio-economic Level I had higher mean scores than pupils in Socio-economic Levels II and III. Consistently, too, pupils in Socio-economic Level II had higher mean scores than pupils in Socio-economic Level III.

Table 19 represents a summary for testing the third main effects hypothesis, determining statistically significant differences between total boys and girls. On each of the first ten criterion variables there were statistically significant differences at the .01 level between the sexes. When these differences existed, the girls had statistically significantly higher mean scores than the boys. Statistically significant differences were not evident between the boys and girls on Task 1 of the Minnesota Tests of Creative Thinking. These findings reaffirm that initial differences in readiness affect final comparative achievement between boys and girls in first grade.

In Tables 20, 21, 22, and 23 second order and first order interaction hypotheses are tested. As indicated in Table 20, there were no statistically significant second order interactions between socio-

TABLE 18

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF DIFFERENCE BETWEEN TOTAL FIRST GRADE PUPILS WITHIN THREE SOCIO-ECONOMIC LEVELS ON FINAL ACHIEVEMENT DATA

Final Variables	Grand Mean S.E.L. I.	S.E.L. II.	S.E.L. III.	*F*
1. Pupil Reading Attitude (San Diego)	18.75	18.35	17.86	.95
Stanford Achievement Tests				
2. Word meaning	26.94	23.52	18.13	67.06*
3. Paragraph meaning	30.28	24.87	21.10	45.51*
4. Vocabulary	26.42	23.36	18.87	40.12*
5. Spelling	17.97	15.00	11.57	46.28*
6. Word study	43.31	39.34	33.86	34.92*
University of Pittsburgh Diagnostic Rating of Language Outcomes				
7. Understandings	3.94	3.73	2.88	38.40*
8. Habits	3.64	3.34	2.56	34.40*
9. Skills	3.71	3.48	2.74	28.35*
10. Personal responses	3.82	3.58	2.78	32.08*
Minnesota Tests of Creative Thinking—Task 1: Figure Completion				
11. Fluency	9.93	9.92	9.98	.48
12. Flexibility	7.13	6.95	6.68	4.88*
13. Elaboration	12.67	11.73	14.46	2.47
14. Originality	7.37	6.46	6.01	3.05**

Total number of pupils in S.E.L. I = 198.
Total number of pupils in S.E.L. II = 200.
Total number of pupils in S.E.L. III = 106.

S.E.L. I = upper socio-economic level.
S.E.L. II = middle socio-economic level.
S.E.L. III = low socio-economic level.

df for Socio-economic Level = 2
df for Error = 492

*Statistically significant (α = .01) = 4.62.
**Statistically significant (α = .05) = 3.00.

TABLE 19

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF DIFFERENCE BETWEEN TOTAL GIRLS AND TOTAL BOYS ON FINAL ACHIEVEMENT DATA

Final Variables	Grand Mean		
	Girls	Boys	F
1. Pupil Reading Attitude (San Diego)	18.88	17.76	16.25*
Stanford Achievements Tests			
2. Word meaning	23.21	22.13	7.18*
3. Paragraph meaning	26.89	23.93	17.13*
4. Vocabulary	22.90	22.88	.05
5. Spelling	15.90	13.80	19.79*
6. Word study	40.12	37.64	10.68*
University of Pittsburgh Diagnostic Rating of Language Outcomes			
7. Understandings	3.72	3.30	24.84*
8. Habits	3.44	2.92	36.43*
9. Skills	3.58	3.04	35.42*
10. Personal responses	3.65	3.15	34.60*
Minnesota Tests of Creative Thinking--Task 1: Figure Completion			
11. Fluency	9.97	9.91	.63
12. Flexibility	7.29	6.89	1.20
13. Elaboration	13.89	12.01	2.09
14. Originality	6.78	6.78	.16

Total number of girls = 256.
Total number of boys = 248.

df for Sex = 1
df for Error = 492

*Statistically significant (α = .01) = 6.66.
**Statistically significant (α = .05) = 3.85.

TABLE 20

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF THE INTERACTION BETWEEN SOCIO-ECONOMIC LEVELS, SEX, AND METHOD ON FINAL ACHIEVEMENT DATA

Final Variables	Means of Interaction Terms (1)	(2)	(3)	F
1. Pupil Reading Attitude (San Diego)	17.98	18.48	18.16	.63
Stanford Achievement Tests				
2. Word meaning	23.32	22.59	23.95	1.34
3. Paragraph meaning	27.45	24.73	26.09	5.70
4. Vocabulary	23.62	22.76	23.02	1.31
5. Spelling	15.49	14.75	14.95	1.39
6. Word study	39.69	38.83	38.93	1.02
University of Pittsburgh Diagnostic Rating of Language Outcomes				
7. Understandings	3.58	3.57	3.45	2.19
8. Habits	3.29	3.18	3.18	1.37
9. Skills	3.41	3.31	3.31	1.11
10. Personal responses	3.48	3.43	3.37	1.52
Minnesota Tests of Creative Thinking—Task 1: Figure Completion				
11. Fluency	9.94	9.90	9.98	.72
12. Flexibility	7.20	6.92	7.26	.60
13. Elaboration	13.38	12.49	13.41	.34
14. Originality	6.48	6.55	7.01	2.01

Total number of pupils = 504.

df for Socio-economic Levels x Sex x Method = 2
df for Error = 492

*Statistically significant (α = .01) = 4.62.
**Statistically significant (α = .05) = 3.00.

economic levels, sex, and method on the fourteen criterion variables listed. Tests of the interactions of Socio-economic Levels x Method and Sex x Method are reported in Tables 21 and 22. Inspection of both tables reveals that we may accept the hypotheses that there are no statistically significant interactions of Socio-economic Levels x Method and Sex x Method on the fourteen criterion variables listed. In Table 23, a statistically significant interaction at the .05 level is noted between sex and socio-economic levels on the paragraph meaning subtest of the Stanford Achievement Test. Figure 10 is a graphic presentation of this interaction. Inspection of Figure 10 reveals nonparallelity exists for sex in terms of socio-economic levels. The plots indicate, nevertheless, some parallelity between the girls and boys from average to high socio-economic levels. Patterns of achievement between boys and girls from average to low socio-economic levels are more diverse on this variable.

Table 24 is included as a summary of the decisions on tests of main effects and interaction hypotheses for fourteen of the variables in Problem One. In order to examine variable means per experimental treatment groups more specifically, Tables 25, 26, 27, and 28 are provided.

Inspection of the tables for cell means gives further evidence that on variables where statistically significant differences were noted, pupils in the Integrated Experience Approach to Communication had higher mean scores. Consistently, too, on these variables the girls in the Integrated Experience Approach to Communication had higher mean scores on the variables than the girls in the Coordinated Basal Language Arts Approach at each socio-economic level.

TABLE 21

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF THE INTERACTION BETWEEN SOCIO-ECONOMIC LEVELS AND METHOD ON FINAL ACHIEVEMENT DATA

	Means of Interaction Terms			
Final Variables	(1)	(2)	(3)	F
1. Pupil Reading Attitude (San Diego)	18.21	18.29	18.35	.16
Stanford Achievement Tests				
2. Word meaning	21.81	22.95	22.39	1.88
3. Paragraph meaning	24.90	25.94	24.88	.75
4. Vocabulary	23.13	22.75	23.03	.23
5. Spelling	14.07	15.58	14.12	2.82
6. Word study	37.53	39.27	38.49	2.18
University of Pittsburgh Diagnostic Rating of Language Outcomes				
7. Understandings	3.45	3.45	3.57	1.61
8. Habits	3.08	3.18	3.18	1.07
9. Skills	3.27	3.38	3.24	.83
10. Personal responses	3.41	3.41	3.39	.08
Minnesota Tests of Creative Thinking--Task 1: Figure Completion				
11. Fluency	9.98	9.91	9.97	.45
12. Flexibility	6.82	7.37	6.81	1.06
13. Elaboration	11.63	12.87	13.03	2.99
14. Originality	6.52	7.00	6.56	.37

Total number of pupils = 504.

df for Socio-economic Levels x Method = 2
df for Error = 492

*Statistically significant (α = .01) = 4.62.
**Statistically significant (α = .05) = 3.00.

TABLE 22

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF THE INTERACTION BETWEEN SEX AND METHOD ON FINAL ACHIEVEMENT DATA

Final Variables	Means of Interaction Terms (1)	(2)	*F*
1. Pupil Reading Attitude (San Diego)	18.17	18.47	.17
Stanford Achievement Tests			
2. Word meaning	22.86	22.48	.14
3. Paragraph meaning	26.11	24.71	.65
4. Vocabulary	23.05	22.73	.001
5. Spelling	14.86	14.84	.14
6. Word study	38.77	38.99	.32
University of Pittsburgh Diagnostic Rating of Language Outcomes			
7. Understandings	3.55	3.47	.73
8. Habits	3.24	3.12	1.17
9. Skills	3.36	3.26	.50
10. Personal responses	3.47	3.33	1.77
Minnesota Tests of Creative Thinking—Task 1: Figure Completion			
11. Fluency	9.92	9.96	1.10
12. Flexibility	7.10	7.08	.00
13. Elaboration	13.03	12.87	.00
14. Originality	6.72	6.84	.03

Total number of pupils = 504.

df for Sex x Method = 1
df for Error = 492

*Statistically significant (α = .01) = 6.66.
**Statistically significant (α = .05) = 3.85.

TABLE 23

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF THE INTERACTION BETWEEN SEX AND SOCIO-ECONOMIC LEVELS ON FINAL ACHIEVEMENT DATA

Final Variables	Means of Interaction Terms (1)	(2)	(3)	F
1. Pupil Reading Attitude (San Diego)	17.79	18.57	18.07	1.88
Stanford Achievement Tests				
2. Word meaning	22.93	22.51	22.83	.32
3. Paragraph meaning	26.86	24.84	25.98	3.91**
4. Vocabulary	23.49	22.58	23.20	.95
5. Spelling	15.51	14.53	15.17	1.47
6. Word study	39.95	38.30	39.46	1.50
University of Pittsburgh Diagnostic Rating of Language Outcomes				
7. Understandings	3.61	3.45	3.57	1.24
8. Habits	3.22	3.17	3.19	.27
9. Skills	3.41	3.28	3.34	1.09
10. Personal responses	3.46	3.41	3.39	.68
Minnesota Tests of Creative Thinking--Task 1: Figure Completion				
11. Fluency	9.93	9.89	9.99	1.53
12. Flexibility	7.34	6.81	7.27	.70
13. Elaboration	14.26	12.10	13.80	2.10
14. Originality	6.98	6.57	6.99	.26

Total number of pupils = 504.

df for Sex x Socio-economic Levels = 2
df for Error = 492

*Statistically significant (α = .01) = 4.62.
**Statistically significant (α = .05) = 3.00.

	Socio-economic Levels		
	I.	II.	III.
Girls	30.88	25.77	24.03
Boys	29.68	23.99	18.17

Variable Means

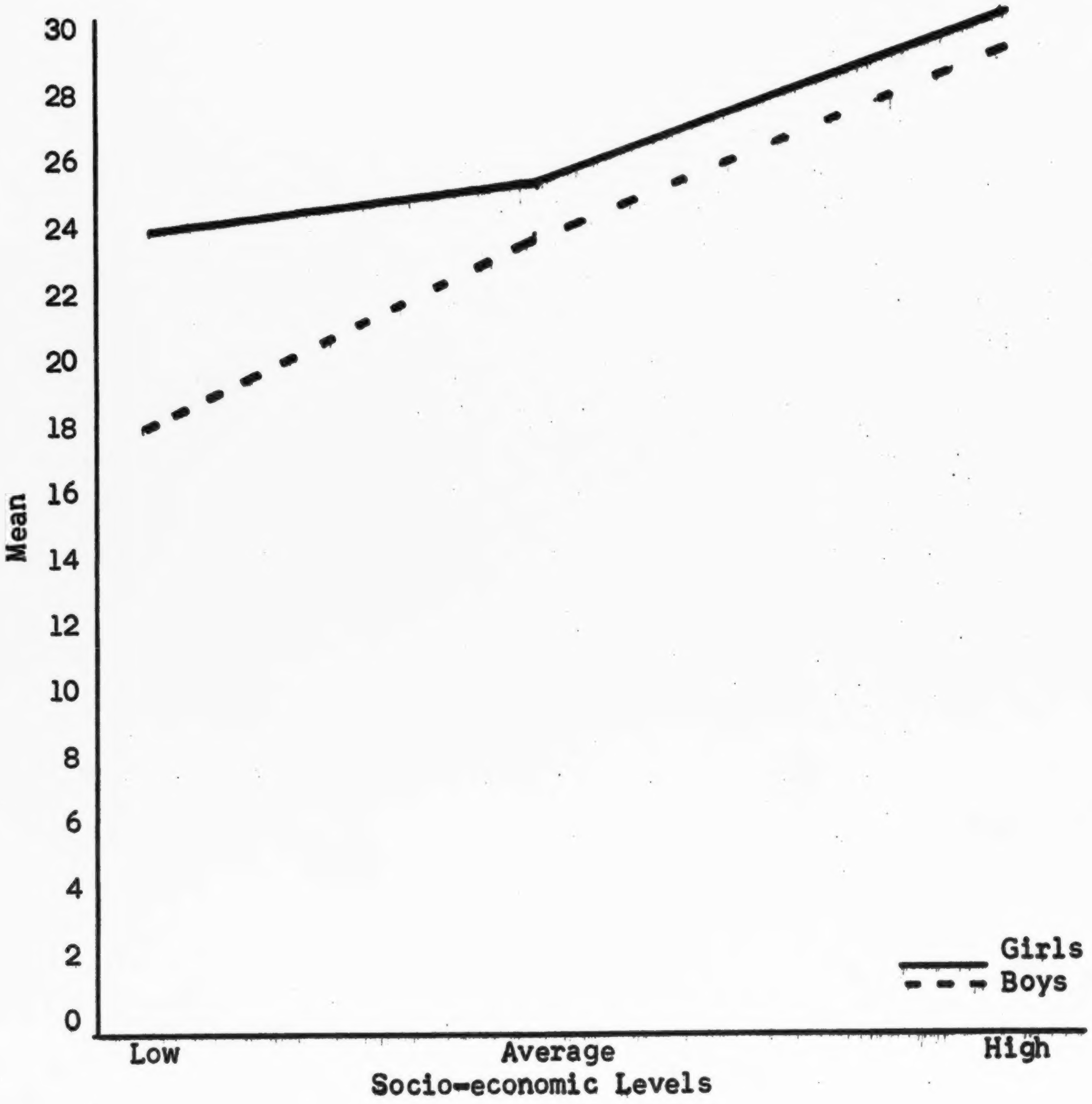

Fig. 10.—Interaction of Sex x Socio-economic Levels (Variable: Paragraph Meaning, Stanford Achievement Tests)

TABLE 24

SUMMARY OF DECISIONS ON TESTS OF MAIN EFFECTS AND INTERACTION HYPOTHESES FOR CRITERION VARIABLES AT .01 AND .05 LEVELS, PROBLEM ONE

Final Variables	Method	Socio-economic Levels	Sex	S.E.L. x Sex x Method	S.E.L. x Method	Sex x Method	Sex x S.E.L.
1. Pupil Reading Attitude (San Diego)	*		*				
Stanford Achievement Tests							
2. Word meaning	*	*	*				
3. Paragraph meaning	*	*	*				**
4. Vocabulary	*	*					
5. Spelling		*	*				
6. Word study	*	*	*				
University of Pittsburgh Diagnostic Rating of Language Outcomes							
7. Understandings		*	*				
8. Habits		*	*				
9. Skills		*	*				
10. Personal Responses		*	*				
Minnesota Tests of Creative Thinking—Task 1: Figure Completion							
11. Fluency							
12. Flexibility		*					
13. Elaboration							
14. Originality		**					

*Accept the null hypothesis at .01 level.
**Accept the null hypothesis at .05 level.

TABLE 25

MEANS FOR EACH EXPERIMENTAL GROUP ON PUPIL READING ATTITUDE, WORD MEANING, AND PARAGRAPH MEANING

Methods	Socio-economic Levels I.	 II.	 III.
A	1. a. 20.43 b. 28.64 c. 31.23 a. 18.71 b. 28.56 c. 31.34 2.	1. a. 19.82 b. 24.80 c. 27.34 a. 18.17 b. 23.80 c. 25.47 2.	1. a. 17.96 b. 20.00 c. 27.29 a. 18.88 b. 16.70 c. 15.94 2.
B	1. a. 18.75 b. 26.09 c. 30.53 a. 17.11 b. 24.45 c. 28.01 2.	1. a. 18.51 b. 21.84 c. 24.19 a. 16.91 b. 21.30 c. 22.42 2.	1. a. 17.82 b. 17.86 c. 20.77 a. 16.78 b. 17.96 c. 20.39 2.

Key:

Method A = The Integrated Experience Approach
Method B = The Co-ordinated Basal Language Arts Approach
Socio-economic Level I = High
Socio-economic Level II = Middle
Socio-economic Level III = Low

1. = Girls
2. = Boys
a. = Pupil Reading Attitude (San Diego Pupil Attitude Inventory)
b. = Word Meaning (Stanford Achievement Tests)
c. = Paragraph Meaning (Stanford Achievement Tests)

TABLE 26

MEANS FOR EACH EXPERIMENTAL GROUP ON VOCABULARY, SPELLING, AND WORD STUDY

Methods	Socio-economic Levels I.	 II.	 III.
A	1. a. 26.84 b. 17.98 c. 45.27 a. 28.27 b. 17.61 c. 45.51 2.	1. a. 24.30 b. 16.14 c. 41.34 a. 24.75 b. 14.88 c. 40.35 2.	1. a. 22.04 b. 12.93 c. 36.75 a. 19.03 b. 8.21 c. 30.73 2.
B	1. a. 25.44 b. 19.36 c. 42.86 a. 25.13 b. 16.91 c. 39.60 2.	1. a. 21.86 b. 15.31 c. 38.65 a. 22.53 b. 13.68 c. 37.02 2.	1. a. 16.91 b. 13.63 c. 35.81 a. 17.48 b. 11.52 c. 32.13 2.

Key:

Method A = The Integrated Experience Approach
Method B = The Co-ordinated Basal Language Arts Approach
Socio-economic Level I = High
Socio-economic Level II = Middle
Socio-economic Level III = Low

1. = Girls
2. = Boys
a. = Vocabulary (Stanford Achievement Tests)
b. = Spelling (Stanford Achievement Tests)
c. = Word Study (Stanford Achievement Tests)

TABLE 26

MEANS FOR EACH EXPERIMENTAL GROUP ON VOCABULARY, SPELLING, AND WORD STUDY

Methods		Socio-economic Levels		
		I.	II.	III.
A	1.	a. 26.84 b. 17.98 c. 45.27	a. 24.30 b. 16.14 c. 41.34	a. 22.04 b. 12.93 c. 36.75
	2.	a. 28.27 b. 17.61 c. 45.51	a. 24.75 b. 14.88 c. 40.35	a. 19.03 b. 8.21 c. 30.73
B	1.	a. 25.44 b. 19.36 c. 42.86	a. 21.86 b. 15.31 c. 38.65	a. 16.91 b. 13.63 c. 35.81
	2.	a. 25.13 b. 16.91 c. 39.60	a. 22.53 b. 13.68 c. 37.02	a. 17.48 b. 11.52 c. 32.13

Key:

Method A = The Integrated Experience Approach
Method B = The Co-ordinated Basal Language Arts Approach
Socio-economic Level I = High
Socio-economic Level II = Middle
Socio-economic Level III = Low

1. = Girls
2. = Boys
a. = Vocabulary (Stanford Achievement Tests)
b. = Spelling (Stanford Achievement Tests)
c. = Word Study (Stanford Achievement Tests)

TABLE 27

MEANS FOR EACH EXPERIMENTAL GROUP ON LANGUAGE UNDERSTANDINGS, HABITS, SKILLS, AND PERSONAL RESPONSES

Methods	Socio-economic Levels		
	I.	II.	III.
A	1. a. 4.14 b. 3.92 c. 3.82 d. 3.92 a. 3.98 b. 3.56 c. 3.54 d. 3.66 2.	1. a. 3.91 b. 3.66 c. 3.84 d. 3.96 a. 3.42 b. 3.03 c. 3.27 d. 3.23 2.	1. a. 3.25 b. 2.93 c. 3.21 d. 3.25 a. 2.39 b. 2.00 c. 2.18 d. 2.33 2.
B	1. a. 4.08 b. 3.80 c. 3.98 d. 4.06 a. 3.57 b. 3.26 c. 3.51 d. 3.62 2.	1. a. 3.84 b. 3.51 c. 3.60 d. 3.75 a. 3.73 b. 3.15 c. 3.21 d. 3.44 2.	1. a. 3.14 b. 2.77 c. 3.00 d. 2.95 a. 2.74 b. 2.52 c. 2.57 d. 2.65 2.

(University of Pittsburgh Diagnostic Rating of Language Outcomes)

Key:

Method A = The Integrated Experience Approach
Method B = The Co-ordinated Basal Language Arts Approach
Socio-economic Level I = High
Socio-economic Level II = Middle
Socio-economic Level III = Low

1. = Girls
2. = Boys
a. = Understandings
b. = Habits
c. = Skills
d. = Personal Responses

TABLE 28

MEANS FOR EACH EXPERIMENTAL GROUP ON CREATIVE THINKING FLUENCY, FLEXIBILITY, ELABORATION, AND ORIGINALITY

Methods	Socio-economic Levels		
	I.	II.	III.
A	1. a. 10.00 b. 7.61 c. 14.78 d. 7.80 a. 9.81 b. 7.00 c. 13.49 d. 6.85 2.	1. a. 9.79 b. 6.76 c. 11.42 d. 6.08 a. 9.95 b. 7.03 c. 12.02 d. 7.10 2.	1. a. 10.00 b. 6.54 c. 15.93 d. 6.00 a. 10.00 b. 5.61 c. 10.52 d. 6.33 2.
B	1. a. 10.03 b. 7.91 c. 11.51 d. 6.97 a. 9.89 b. 8.02 c. 10.89 d. 7.87 2.	1. a. 10.00 b. 7.18 c. 12.21 d. 6.40 a. 9.92 b. 6.83 c. 11.27 d. 6.24 2.	1. a. 10.00 b. 7.73 c. 17.50 d. 7.41 a. 9.91 b. 6.83 c. 13.91 d. 6.30 2.

(Minnesota Tests of Creative Thinking—Task 1: Figure Completion)

Key:
Method A = The Integrated Experience Approach
Method B = The Co-ordinated Basal Language Arts Approach
Socio-economic Level I = High
Socio-economic Level II = Middle
Socio-economic Level III = Low

1. = Girls
2. = Boys
a. = Fluency
b. = Flexibility
c. = Elaboration
d. = Originality

A similar mean score achievement pattern is evident for the boys. Boys in the Integrated Experience Approach to Communication had higher mean scores than the boys in the Co-ordinated Basal Language Arts Approach within Socio-economic Levels I and II. Not in all instances, though, was this mean score pattern present between the boys in each method within Socio-economic Level III. This lack of consistency can be attributed to the fact that boys in the Co-ordinated Basal Language Arts Approach, Socio-economic Level III, had higher mean readiness scores than boys in the Socio-economic Level III in the Integrated Experience Approach to Communication.

Criterion variables fifteen to twenty-six are considered on the following pages. The first main effects hypotheses for variables fifteen to twenty-six involved the sub-sample comparison between total pupils in the Integrated Experience Approach to Communication and total pupils in the Co-ordinated Basal Language Arts Approach. As indicated in Table 29, there were statistically significant differences at the .05 level between pupils in Method A and Method B on the Elaboration and Originality Indices: Product Improvement Task, Minnesota Tests of Creative Thinking; the Gates Word Pronunciation Test; the Karlsen Phonemic Word Test; and the Mechanics Ratio: Creative Writing Restricted Stimulus Measure. In each instance on these measures, pupils in the Integrated Experience Approach to Communication had statistically significantly higher mean scores than pupils in the Co-ordinated Basal Language Arts Approach.

The second main effects hypothesis involved determining if there were statistically significant differences between the population sub-sample within Socio-economic Levels I, II, and III. As

TABLE 29

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF DIFFERENCE BETWEEN FIRST GRADE PUPILS IN TWO METHODS ON FINAL ACHIEVEMENT DATA

	Grand Mean		
Final Variables	Method A	Method B	*F*
Minnesota Tests of Creative Thinking—Task 3: Product Improvement			
15. Fluency	7.79	6.87	.07
16. Flexibility	3.67	3.37	.30
17. Elaboration	1.99	.81	5.95**
18. Originality	5.65	4.25	5.50**
Gilmore Oral Reading			
19. Rate	69.60	68.14	.33
20. Accuracy	23.84	22.22	1.42
21. Gates Word Pronunciation Test	15.80	13.16	4.98**
22. Fry Phonetically Regular Words Test	9.03	7.27	3.41
23. Karlsen Phonemic Word Test	14.24	11.38	3.97**
Creative Writing Restricted Stimulus Measure			
24. Mechanics ratio	74.72	64.74	4.50**
25. Spelling	26.05	24.17	.06
26. Total words	29.97	27.81	.09

Total number of pupils in Method A = 50.
Total number of pupils in Method B = 51.

Method A = The Integrated Experience Approach to Communicatio
Method B = The Co-ordinated Language Arts Approach

df for Method = 1
df for Error = 89

*Statistically significant (α = .01) = 6.96.
**Statistically significant (α = .05) = 3.96.

shown in Table 30, there were statistically significant differences between pupils within socio-economic levels at the .01 or .05 levels on the Gates Word Pronunciation Test, Gilmore Oral Reading Rate, and Karlsen Phonemic Word Test. When statistically significant differences were observed, pupils in Socio-economic Level I had higher mean scores than pupils in Socio-economic Levels II and III. Consistently, too, pupils in Socio-economic Level II had higher mean scores than pupils in Socio-economic Level III.

Table 31 represents a summary for testing the third main effects hypothesis, determining statistically significant differences between total boys and girls. At the .01 and .05 levels, statistically significant differences between the sexes were noted on the Fluency Index of Task 3: Minnesota Tests of Creative Thinking and the Gilmore Oral Reading Rate. When differences were noted between the sexes, the girls had consistently higher mean scores.

In Tables 32, 33, 34, and 35 second order and first order interation hypotheses are tested. As indicated in Tables 32 and 33, there were no statistically significant interactions of Socio-economic Levels x Sex x Method or Socio-economic Levels x Method on criterion variables fifteen to twenty-six. In Table 34, statistically significant interactions of Sex x Method are noted at the .01 level on the Mechanics Ratio, Creative Writing Restricted Stimulus Measure and the Originality Index: Task 3, Minnesota Tests of Creative Thinking. Figures 11 and 12 are graphic presentations of these interactions. Inspection of Figure 11 reveals that non-parallelity exists for sex in terms of methods on the originality index variable. The plots indicate some parallelity between the girls in Methods A and B.

TABLE 30

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF DIFFERENCE BETWEEN FIRST GRADE PUPILS WITHIN THREE SOCIO-ECONOMIC LEVELS ON FINAL ACHIEVEMENT DATA

	Grand Mean			
Final Variables	S.E.L. I.	S.E.L. II.	S.E.L. III.	F
Minnesota Tests of Creative Thinking--Task 3: Product Improvement				
15. Fluency	7.33	7.89	6.78	.22
16. Flexibility	3.17	2.51	3.14	.25
17. Elaboration	2.03	1.57	.60	1.08
18. Originality	5.76	5.07	4.01	.39
Gilmore Oral Reading				
19. Rate	79.81	69.28	57.55	3.22**
20. Accuracy	25.39	24.53	19.17	1.58
21. Gates Word Pronunciation Test	17.62	14.17	11.65	4.98*
22. Fry Phonetically Regular Word Test	10.93	8.84	4.68	2.91
23. Karlsen Phonemic Word Test	16.63	13.38	8.43	3.95**
Creative Writing Restricted Stimulus Measure				
24. Mechanics ratio	70.94	75.80	62.46	.95
25. Spelling	27.72	23.65	23.96	.81
26. Total words	31.69	26.65	28.33	.99

Total number of pupils in S.E.L. I = 34.
Total number of pupils in S.E.L. II = 53.
Total number of pupils in S.E.L. III = 14.

S.E.L. I = upper socio-economic level.
S.E.L. II = middle socio-economic level.
S.E.L. III = low socio-economic level.

df for Socio-economic Level = 2
df for Error = 89

*Statistically significant (α = .01) = 4.88.
**Statistically significant (α = .05) = 3.11.

TABLE 31

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF DIFFERENCE BETWEEN TOTAL GIRLS AND TOTAL BOYS ON FINAL ACHIEVEMENT DATA

Final Variables	Grand Mean Girls	Grand Mean Boys	*F*
Minnesota Tests of Creative Thinking--Task 3: Product Improvement			
15. Fluency	8.98	5.68	7.48*
16. Flexibility	3.15	2.89	.87
17. Elaboration	1.46	1.32	.14
18. Originality	5.74	4.16	2.42
Gilmore Oral Reading			
19. Rate	74.77	62.99	5.57**
20. Accuracy	25.13	20.93	2.07
21. Gates Word Pronunciation Test	8.34	7.96	.17
22. Fry Phonetically Regular Word Test	14.77	14.19	.001
23. Karlsen Phonemic Word Test	13.80	11.82	.79
Creative Writing Restricted Stimulus Measure			
24. Mechanics ratio	61.48	77.98	2.15
25. Spelling	25.76	24.46	.98
26. Total words	30.14	27.64	1.20

Total number of girls = 49.
Total number of boys = 52.

df for Sex = 1
df for Error = 89

*Statistically significant (α = .01) = 6.96.
**Statistically significant (α = .05) = 3.96.

TABLE 32

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF THE INTERACTION BETWEEN SOCIO-ECONOMIC LEVELS, SEX, AND METHOD ON FINAL ACHIEVEMENT DATA

Final Variables	Means of Interaction Terms			F
	(1)	(2)	(3)	
Minnesota Tests of Creative Thinking—Task 3: Product Improvement				
15. Fluency	7.75	8.12	6.54	1.03
16. Flexibility	2.93	3.41	2.63	1.55
17. Elaboration	1.57	1.55	1.23	.32
18. Originality	5.44	5.19	4.71	.47
Gilmore Oral Reading				
19. Rate	72.24	67.32	70.44	.19
20. Accuracy	24.69	21.91	24.15	.34
21. Gates Word Pronunciation Test	9.06	8.19	8.11	.63
22. Fry Phonetically Regular Word Test	15.91	13.93	15.03	.31
23. Karlsen Phonemic Word Test				.23
Creative Writing Restricted Stimulus Measure				
24. Mechanics ratio	75.51	65.22	74.24	.52
25. Spelling	26.12	23.60	26.62	.28
26. Total words	30.91	26.82	30.96	.42

Total number of pupils = 101.

df for Socio-economic Levels x Sex x Method = 2
df for Error = 89

*Statistically significant (α = .01) = 4.88
**Statistically significant (α = .05) = 3.11

TABLE 33

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF THE INTERACTION BETWEEN SOCIO-ECONOMIC LEVELS AND METHOD ON FINAL ACHIEVEMENT DATA

Final Variables	Means of Interaction Terms (1)	(2)	(3)	F
Minnesota Tests of Creative Thinking—Task 3: Product Improvement				
15. Fluency	4.55	7.15	7.51	.09
16. Flexibility	1.09	2.69	3.45	1.69
17. Elaboration	.93	1.71	1.09	.25
18. Originality	3.84	4.92	4.98	.22
Gilmore Oral Reading				
19. Rate	66.10	71.03	66.73	.15
20. Accuracy	22.05	23.74	22.22	.11
21. Gates Word Pronunciation Test	14.01	14.22	14.74	.27
22. Fry Phonetically Regular Word Test	6.22	8.86	7.44	.74
23. Karlsen Phonemic Word Test	11.70	13.42	12.42	.18
Creative Writing Restricted Stimulus Measure				
24. Mechanics ratio	67.04	74.18	65.28	.48
25. Spelling	28.84	22.76	27.46	.95
26. Total words	33.74	26.12	31.66	1.29

Total number of pupils = 101.

df for Socio-economic Levels x Method = 2
df for Error = 89

*Statistically significant (α = .01) = 4.88.
**Statistically significant (α = .05) = 3.11.

TABLE 34

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF THE INTERACTION BETWEEN SEX AND METHOD ON FINAL ACHIEVEMENT DATA

Final Variables	Means of Interaction Terms (1)	(2)	F
Minnesota Tests of Creative Thinking—Task 3: Product Improvement			
15. Fluency	7.69	6.97	.47
16. Flexibility	2.70	3.24	3.41
17. Elaboration	1.56	1.22	.28
18. Originality	6.05	3.85	4.36**
Gilmore Oral Reading			
19. Rate	69.82	67.94	.003
20. Accuracy	22.71	33.35	.72
21. Gates Word Pronunciation Test	14.20	14.76	1.15
22. Fry Phonetically Regular Word Test	7.84	8.46	.47
23. Karlsen Phonemic Word Test	13.07	12.55	.008
Creative Writing Restricted Stimulus Measure			
24. Mechanics ratio	63.00	76.46	7.32*
25. Spelling	26.82	23.40	.82
26. Total words	31.44	26.34	1.37

Total number of pupils = 101.

df for Sex x Method = 1
df for Error = 89

*Statistically significant (α = .01) = 6.96.
**Statistically significant (α = .05) = 3.96.

TABLE 35

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF THE INTERACTION BETWEEN SEX AND SOCIO-ECONOMIC LEVELS ON FINAL ACHIEVEMENT DATA

Final Variables	Means of Interaction Terms (1)	(2)	(3)	F
Minnesota Tests of Creative Thinking--Task 3: Product Improvement				
15. Fluency	7.15	7.42	7.24	.09
16. Flexibility	2.91	2.97	3.07	.23
17. Elaboration	1.31	1.39	1.39	.008
18. Originality	5.31	4.69	5.21	.05
Gilmore Oral Reading				
19. Rate	66.69	69.26	68.50	.23
20. Accuracy	24.60	21.99	24.07	.23
21. Gates Word Pronunciation Test	14.54	14.54	14.42	.005
22. Fry Phonetically Regular Word Test	8.49	7.94	8.36	.01
23. Karlsen Phonemic Word Test	13.13	12.05	13.57	.19
Creative Writing Restricted Stimulus Measure				
24. Mechanics ratio	61.19	79.18	59.28	1.93
25. Spelling	22.87	26.50	23.72	.17
26. Total words	27.81	29.68	28.10	.02

Total number of pupils = 101.

df for Sex x Socio-economic Levels = 2
df for Error = 89

*Statistically significant (α = .01) = 4.88.
**Statistically significant (α = .05) = 3.11.

Methods	Girls	Boys
A	7.53	3.75
B	3.95	4.55

Variable Means

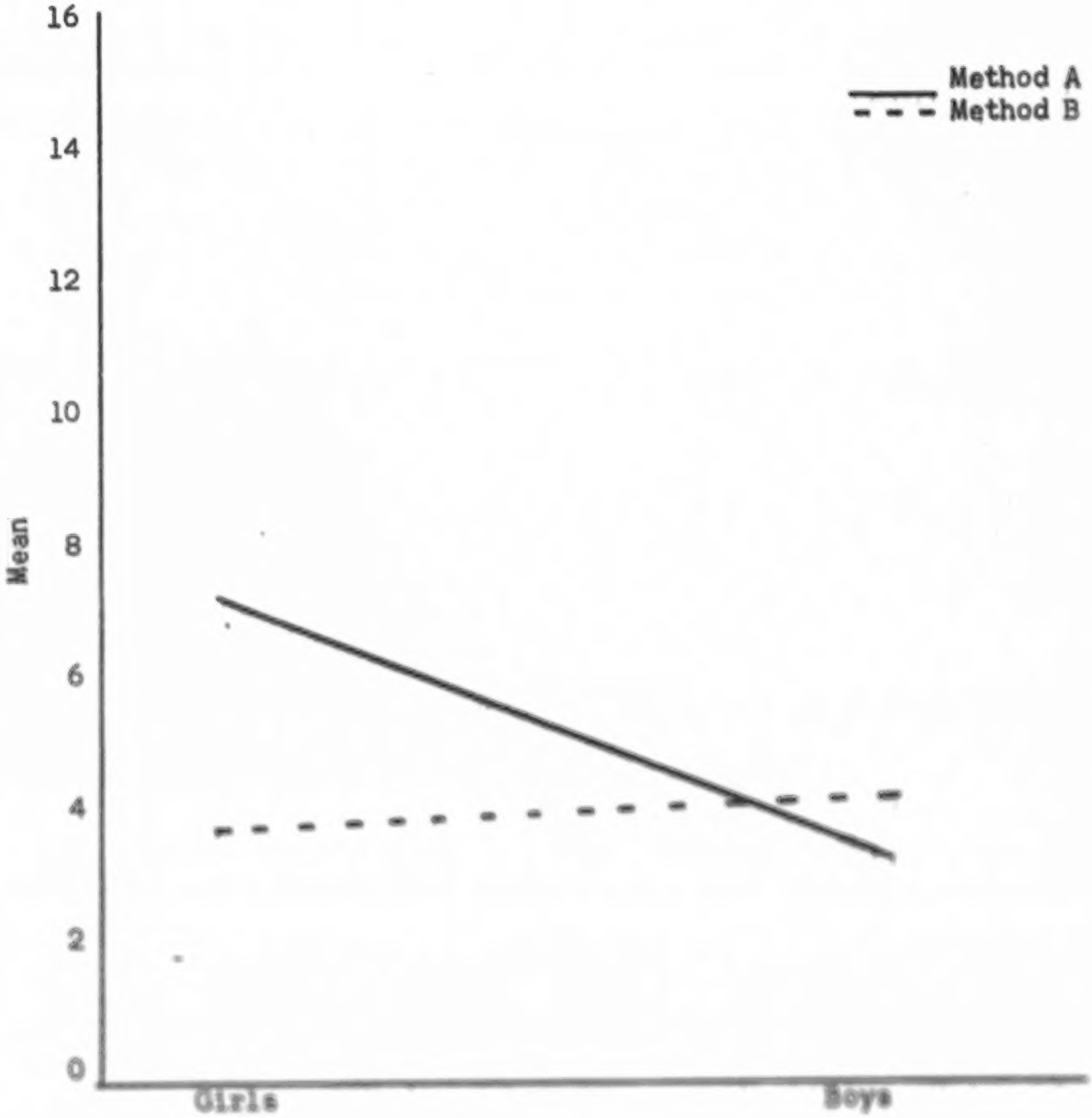

Fig. 11.—Interaction of Sex x Method (Variable: Originality, Product Improvement Task, Minnesota Tests of Creative Thinking)

Methods	Girls	Boys
A	57	89
B	63.23	66.27

Variable Means

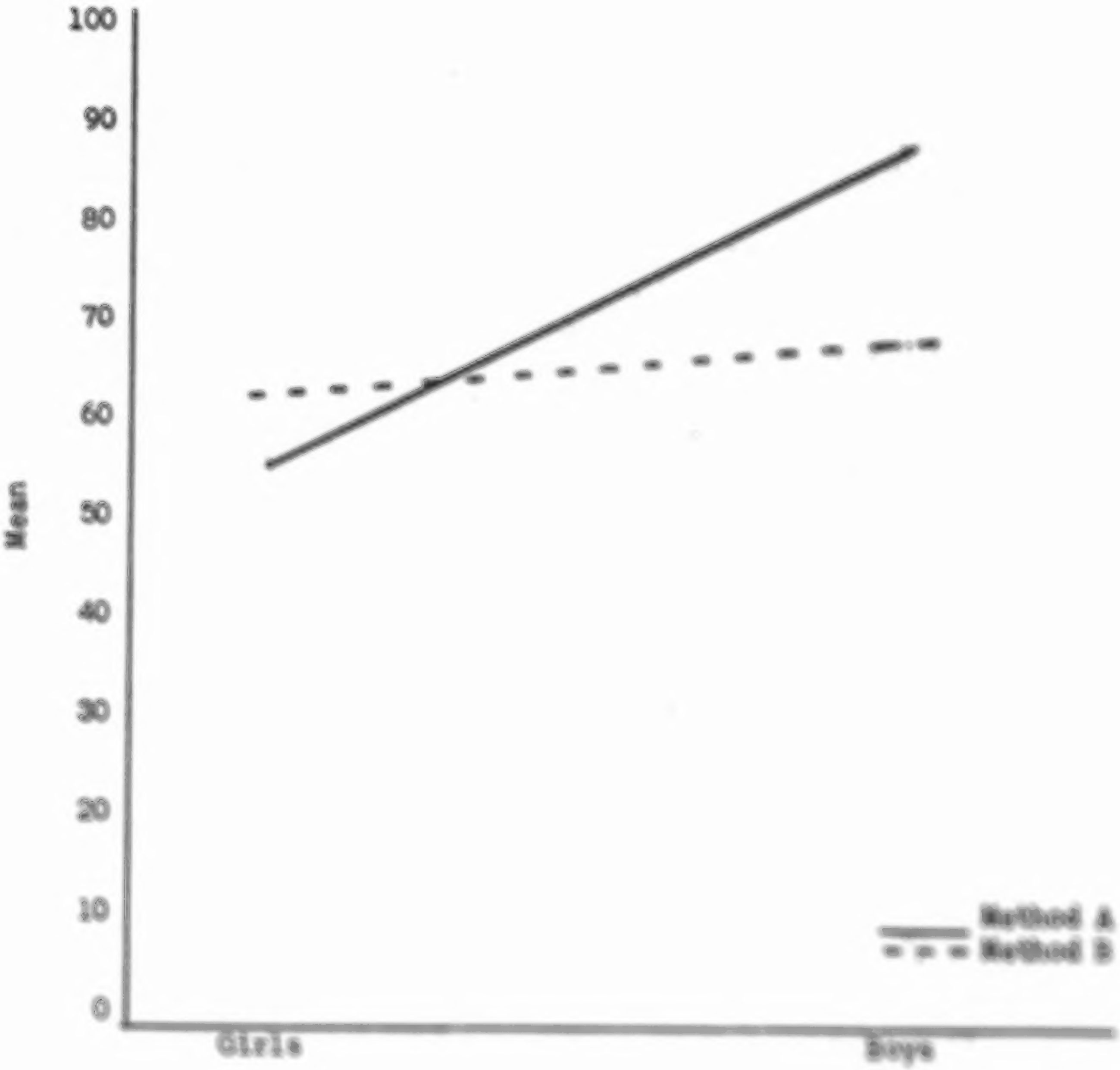

Fig. 12.—Interaction of Sex x Method
(Variable: Mechanics Ratio, Creative Writing Stimulus)

Figure 12 reflects non-parallelity on the mechanics ratio for creative writing between sexes by method. Some parallelity, as plotted, exists between the boys in Methods A and B. There were no statistically significant interactions between sex and socio-economc levels on variables fifteen to twenty-six.

Table 36 is included as a summary of the decisions on tests of main effects and interaction hypotheses for the criterion variables fifteen to twenty-six. In order to examine variable means per experimental treatment groups more specifically, Tables 37, 38, 39, and 40 are provided. Inspection of these tables gives further evidence that on variables where statistically significant differences were noted between methods, pupils in the Integrated Experience Approach to Communication generally had higher mean scores.

B. Problem Two: Analysis of the Effects of Mental Age Levels, Methods, and Sex on Pupil Achievement in First Grade

The main effect and interaction hypotheses in Problem Two are considered in view of ten criterion variables involving the total pupil population. Pupil population sampling size differed slightly from the population sampling for Problem One. This difference in case numbers can be attributed to the necessity for cell sampling to eliminate gross disproportionality. Sample size per cell, per effect reflects sample stratification in raw score thirds on the Pintner-Cunningham Test of Mental Ability. In examining the effects of method, sex, and Sex x Method in both Problems One and Two, _F_ ratio comparisons were comparable. In each problem the population was representatively

TABLE 36

SUMMARY OF DECISIONS ON TESTS OF MAIN EFFECTS AND INTERACTION HYPOTHESES FOR CRITERION VARIABLES AT .01 AND .05 LEVELS, PROBLEM ONE

Final Variables	Method	Socio-economic Levels	Sex	S.E.L. x Sex x Method	S.E.L. x Method	Sex x Method	Sex x S.E.L.
Minnesota Tests of Creative Thinking—Task 3: Product Improvement							
15. Fluency			*				
16. Flexibility							
17. Elaboration	**						
18. Originality	**					**	
Gilmore Oral Reading							
19. Rate		**	**				
20. Accuracy							
21. Gates Word Pronunciation Test	**	*					
22. Fry Phonetically Regular Word Test							
23. Karlsen Phonemic Word Test	**	**					
Creative Writing Restricted Stimulus Measure							
24. Mechanics Ratio	**					*	
25. Spelling							
26. Total words							

*Accept the null hypothesis at .01 level.

**Accept the null hypothesis at .05 level.

TABLE 37

MEANS FOR EACH EXPERIMENTAL GROUP ON CREATIVE THINKING, FLUENCY, FLEXIBILITY, ELABORATION, AND ORIGINALITY

Methods	Socio-economic Levels I.	II.	III.
A	1. a. 7.83 b. 3.67 c. 2.33 d. 7.00 a. 7.11 b. 3.67 c. 2.67 d. 4.89 2.	1. a. 11.07 b. 3.67 c. 2.87 d. 7.60 a. 5.29 b. 2.29 c. 2.07 d. 3.86 2.	1. a. 10.50 b. 4.75 c. 1.50 d. 8.00 a. 5.00 b. 4.00 c. .50 d. 2.50 2.
B	1. a. 9.27 b. 2.82 c. 1.73 d. 5.91 a. 5.12 b. 2.50 c. 1.38 d. 5.25 2.	1. a. 8.20 b. 2.00 c. .40 d. 3.60 a. 7.00 b. 3.07 c. .93 d. 5.21 2.	1. a. 7.00 b. 2.00 c. .00 d. 2.33 a. 4.60 b. 1.80 c. .40 d. 3.20 2.

(Minnesota Tests of Creative Thinking—Task 3: Product Improvement)

Key:
Method A = The Integrated Experience Approach
Method B = The Co-ordinated Basal Language Arts Approach
Socio-economic Level I = High
Socio-economic Level II = Middle
Socio-economic Level III = Low

1. = Girls
2. = Boys
a. = Fluency
b. = Flexibility
c. = Elaboration
d. = Originality

TABLE 38

MEANS FOR EACH EXPERIMENTAL GROUP ON ORAL READING ACCURACY AND RATE

Methods	Socio-economic Levels		
	I.	II.	III.
A	1. a. 27.17 b. 88.00	1. a. 25.67 b. 77.80	1. a. 24.00 b. 63.50
	a. 25.78 b. 74.33 2.	a. 26.43 b. 66.50 2.	a. 14.00 b. 47.50 2.
B	1. a. 26.73 b. 87.00	1. a. 25.50 b. 73.30	1. a. 21.66 b. 59.00
	a. 21.88 b. 69.88 2.	a. 20.50 b. 59.50 2.	a. 17.00 b. 60.20 2.

(Gilmore Oral Reading Test)

Key:

Method A = The Integrated Experience Approach
Method B = The Co-ordinated Basal Language Arts Approach
Socio-economic Level I = High
Socio-economic Level II = Middle
Socio-economic Level III = Low

1. = Girls
2. = Boys
a. = Accuracy
b. = Rate

TABLE 39

MEANS FOR EACH EXPERIMENTAL GROUP ON THE GATES WORD PRONUNCIATION TEST, FRY PHONETICALLY REGULAR WORD TEST, AND KARLSEN PHONEMIC WORD TEST

Methods	Socio-economic Levels		
	I.	II.	III.
A	1. a. 18.67 b. 11.83 c. 19.67	1. a. 14.73 b. 10.13 c. 15.33	1. a. 14.00 b. 4.75 c. 11.50
	a. 20.66 b. 14.22 c. 17.89 2.	a. 15.72 b. 10.72 c. 15.07 2.	a. 11.00 b. 2.50 c. 6.00 2.
B	1. a. 16.90 b. 10.18 c. 16.45	1. a. 14.30 b. 7.50 c. 11.90	1. a. 10.00 b. 5.67 c. 8.00
	a. 14.25 b. 7.50 c. 12.50 2.	a. 11.93 b. 7.00 c. 11.21 2.	a. 11.60 b. 5.80 c. 8.20 2.

Key:

Method A = The Integrated Experience Approach
Method B = The Co-ordinated Basal Language Arts Approach
Socio-economic Level I = High
Socio-economic Level II = Middle
Socio-economic Level III = Low

1. = Girls
2. = Boys
a. = Gates Word Pronunciation Test
b. = Fry Phonetically Regular Word Test
c. = Karlsen Phonemic Word Test

TABLE 40

MEANS FOR EACH EXPERIMENTAL GROUP ON THE CREATIVE WRITING RESTRICTED STIMULUS MEASURE OF MECHANICS, SPELLING, AND TOTAL WORDS

Methods	Socio-economic Levels I.	 II.	 III.
A	1. a. 57.00 b. 31.00 c. 34.83 a. 91.33 b. 23.56 c. 26.56 2.	1. a. 75.20 b. 24.47 c. 27.47 a. 95.28 b. 20.00 c. 22.43 2.	1. a. 47.00 b. 29.75 c. 39.00 a. 82.50 b. 27.50 c. 29.50 2.
B	1. a. 66.55 b. 27.45 c. 31.64 a. 68.88 b. 28.88 c. 33.75 2.	1. a. 78.80 b. 26.90 c. 29.90 a. 53.93 b. 23.21 c. 26.79 2.	1. a. 44.33 b. 15.00 c. 18.00 a. 76.00 b. 23.60 c. 26.80 2.

Key:

Method A = The Integrated Experience Approach
Method B = The Co-ordinated Basal Language Arts Approach
Socio-economic Level I = High
Socio-economic Level II = Middle
Socio-economic Level III = Low

(Creative Writing Restricted Stimulus Measure)
1. = Girls
2. = Boys
a. = Mechanics Ratio
b. = Spelling
c. = Total Words

identical. Therefore, only the main effect and interaction hypotheses specifically related to mental age will be described in more depth.

Table 41 represents a summary of the effects of mental age levels on pupil achievement on ten criterion variables. As shown, statistically significant differences at the .01 level were evident between total pupils within each mental age level on nine of the listed variables. It is apparent, therefore, that pupil attitude as measured is not significantly affected by a child's level of mental ability. In each of the other nine variables, pupils at Mental Age Level 1 had consistently higher mean scores than pupils at Mental Age Levels 2 and 3. Pupils in Mental Age Level 2 had higher mean scores than those in Mental Age Level 3.

The second order and first order interaction hypotheses of Mental Age Levels x Sex x Method; Mental Age Levels x Method; and Sex x Mental Age Levels are summarized in Tables 42, 43, and 44. An inspection of Table 42 reveals that there are no statistically significant interactions between mental age levels, sex, and method on the criterion variables listed. As indicated in Table 43, a statistically significant interaction at the .01 level is noted between mental age levels and method on the vocabulary subsection of the Stanford Achievement Tests. Figure 13 is a graphic presentation of this interaction. Inspection of Figure 13 reveals that non-parallelity exists for mental age levels in terms of method. The plots indicate, nevertheless, some parallelity between pupils in Methods 1 and 2 from middle to high mental age levels.

As reflected in Table 44, statistically significant interactions at the .01 level are apparent between sex and mental age levels

TABLE 41

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF DIFFERENCE BETWEEN TOTAL FIRST GRADE PUPILS WITHIN THREE MENTAL AGE LEVELS ON FINAL ACHIEVEMENT DATA

	Grand Mean			
Final Variables	M.A.L. 1	M.A.L. 2	M.A.L. 3	F
1. Reading attitude (San Diego)	18.33	18.50	17.67	1.00
2. Word meaning (Stanford)	26.99	22.54	20.12	24.84*
3. Paragraph meaning (Stanford)	30.67	24.76	24.12	22.04*
4. Vocabulary (Stanford)	28.05	22.38	20.22	40.08*
5. Spelling (Stanford)	17.57	14.96	13.26	9.70*
6. Word study (Stanford)	44.83	38.26	34.31	26.58*
7. Language understandings	4.25	3.52	2.81	36.23*
8. Language habits	3.90	3.18	2.60	28.60*
9. Language skills	4.01	3.30	2.68	28.74*
10. Personal responses	4.04	3.41	2.80	24.26*

Total number of pupils in M.A.L. 1 = 140.
Total number of pupils in M.A.L. 2 = 352.
Total number of pupils in M.A.L. 3 = 32.

M.A.L. 1 = upper mental age level.
M.A.L. 2 = middle mental age level.
M.A.L. 3 = low mental age level.

df for Mental Age Level = 2
df for Error = 512

*Statistically significant (α = .01) = 4.62.
**Statistically significant (α = .05) = 3.00.

TABLE 42

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF THE INTERACTION BETWEEN MENTAL AGE LEVELS, SEX, AND METHOD ON FINAL ACHIEVEMENT DATA

Final Variables	Means of Interaction Terms (1)	(2)	(3)	F
1. Reading attitude (San Diego)	18.66	17.97	17.88	1.45
2. Word meaning (Stanford)	22.61	23.29	23.77	.65
3. Paragraph meaning (Stanford)	25.77	25.56	28.24	1.31
4. Vocabulary (Stanford)	23.17	22.53	24.95	2.15
5. Spelling (Stanford)	15.42	15.28	15.08	.05
6. Word study (Standford)	38.14	38.93	40.41	.84
7. Language understandings	3.45	3.58	3.56	.73
8. Language habits	3.11	3.32	3.36	1.76
9. Language skills	3.30	3.45	3.23	1.29
10. Personal responses	3.38	3.58	3.33	2.06

Total number of pupils = 524.

df for Mental Age Levels x Sex x Method = 2
df for Error = 512

*Statistically significant (α = .01) = 4.62.
**Statistically significant (α = .05) = 3.00.

TABLE 43

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF THE INTERACTION BETWEEN MENTAL AGE LEVELS AND METHOD ON FINAL ACHIEVEMENT DATA

Final Variables	Means of Interaction Terms (1)	(2)	(3)	F
1. Reading attitude (San Diego)	17.85	18.44	18.21	.72
2. Word meaning (Stanford)	22.83	22.67	24.17	.78
3. Paragraph meaning (Stanford)	26.47	25.05	28.05	2.98
4. Vocabulary (Stanford)	21.62	22.44	26.59	8.08*
5. Spelling (Stanford)	15.30	15.13	15.35	.06
6. Word study (Stanford)	39.72	38.41	39.34	.92
7. Language understandings	3.55	3.46	3.58	.40
8. Language habits	3.35	3.13	3.20	1.53
9. Language skills	3.36	3.30	3.33	.04
10. Personal responses	3.43	3.41	3.45	.00

Total number of pupils = 524.

df for Mental Age Levels x Method = 2
df for Error = 512

*Statistically significant (α = .01) = 4.62.
**Statistically significant (α = .05) = 3.00.

Methods	Mental Age Levels		
	Low	Middle	High
1	25.50	23.51	28.35
2	14.94	21.26	27.75

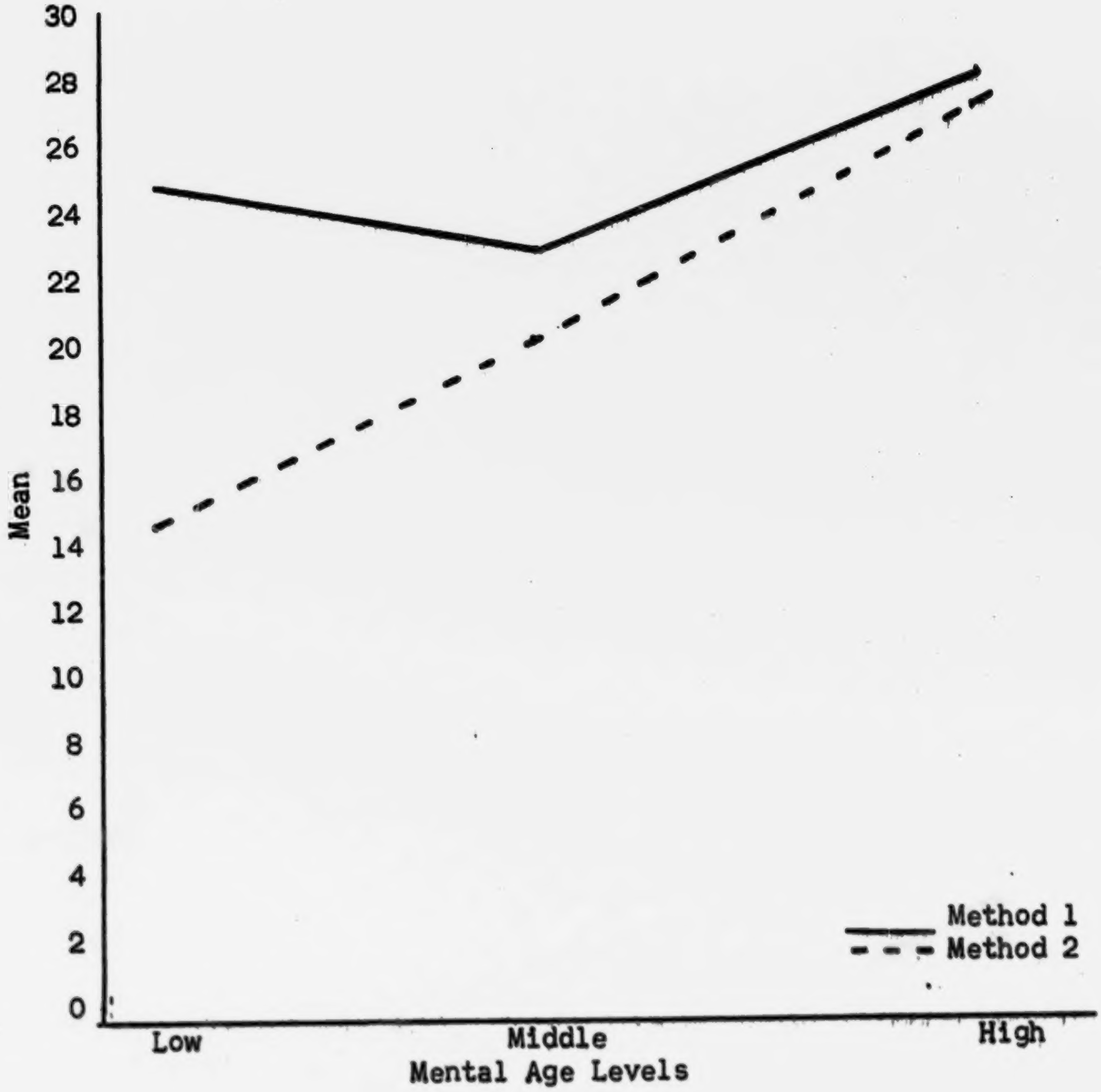

Fig. 13.—Interaction of Mental Age Levels x Method (Variable: Vocabulary, Stanford Achievement Test)

TABLE 44

SUMMARY OF THE UNIVARIATE ANALYSIS OF VARIANCE FOR TESTING THE SIGNIFICANCE OF THE INTERACTION BETWEEN SEX AND MENTAL AGE LEVELS ON FINAL ACHIEVEMENT DATA

Final Variables	Means of Interaction Terms			F
	(1)	(2)	(3)	
1. Reading attitude (San Diego)	18.44	18.44	17.63	.49
2. Word meaning (Stanford)	22.68	23.13	23.84	.38
3. Paragraph meaning (Stanford)	25.35	25.11	29.10	2.49
4. Vocabulary (Stanford)	21.91	22.57	26.17	4.92*
5. Spelling (Stanford)	13.70	14.96	17.12	4.62*
6. Word study (Stanford)	37.20	38.77	41.50	2.77
7. Language understandings	3.41	3.53	3.40	1.03
8. Language habits	3.23	3.24	3.21	.06
9. Language skills	3.29	3.31	3.39	.14
10. Personal responses	3.34	3.39	3.56	.60

Total number of pupils = 524.

df for Sex x Mental Age = 2
df for Error = 512

*Statistically significant (α = .01) = 4.62.
**Statistically significant (α = .05) = 3.00.

on the vocabulary and spelling subsections of the Stanford Achievement Test. Figures 14 and 15 are graphic presentations of these interactions. Inspection of Figure 14 reveals that non-parallelity exists between girls and boys from low to middle mental age levels on vocabulary. The plots on Figure 15 illustrate some parallelity between girls and boys at low socio-economic levels. Yet non-parallelity from low to middle to high mental age levels on spelling is quite evident.

Table 45 is included as a summary of all decisions on tests of main effects and interaction hypotheses. In order to examine variable means per experimental treatment more specifically, Tables 46, 47, and 48 are provided. Consistently, on those variables in which statistically significant differences were noted, pupils in the Integrated Experience Approach to Communication had higher mean scores than pupils in the Co-ordinated Basal Language Arts Approach within mental age levels.

C. Problem Three: The Feasibility of Predictive Regression Analyses in First Grade

In order to study the feasibility and value of establishing a predictive regression equation between initial and final pupil-teacher variables in this investigation, forty variables were examined for the total pupil population in terms of variable means, standard deviations, and multiple correlation matrices. Tables 49, 50, and 51 provide information about variable coding, variable means, variable standard deviations, and variable correlation.

	Mental Age Levels		
	Low	Middle	High
Girls	23.50	22.08	27.08
Boys	16.94	22.70	29.02

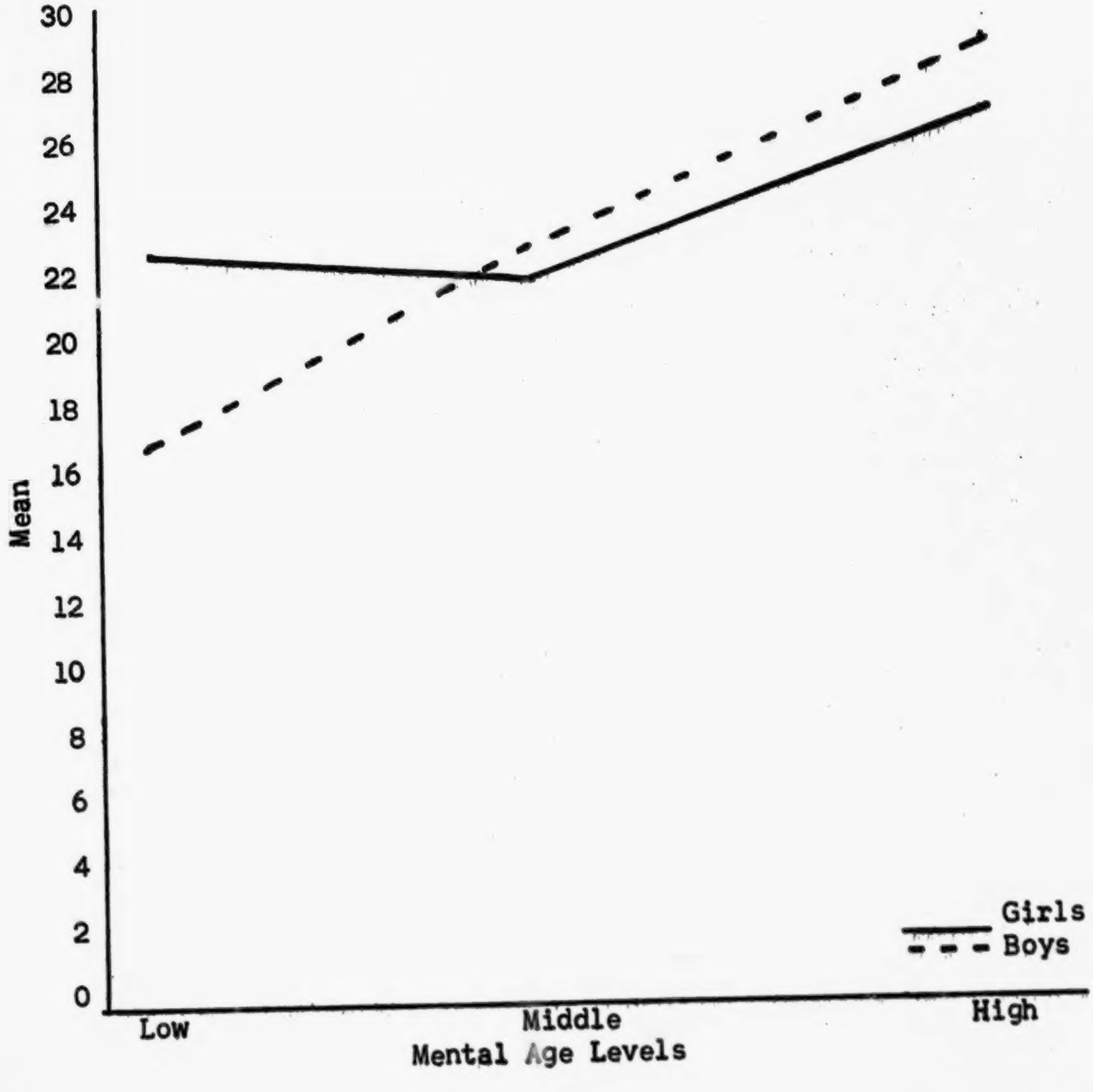

Fig. 14.—Interaction of Sex x Mental Age Levels (Variable: Vocabulary, Stanford Achievement Test)

	Mental Age Levels		
	Low	Middle	High
Girls	16.42	15.95	17.30
Boys	10.11	13.97	17.84

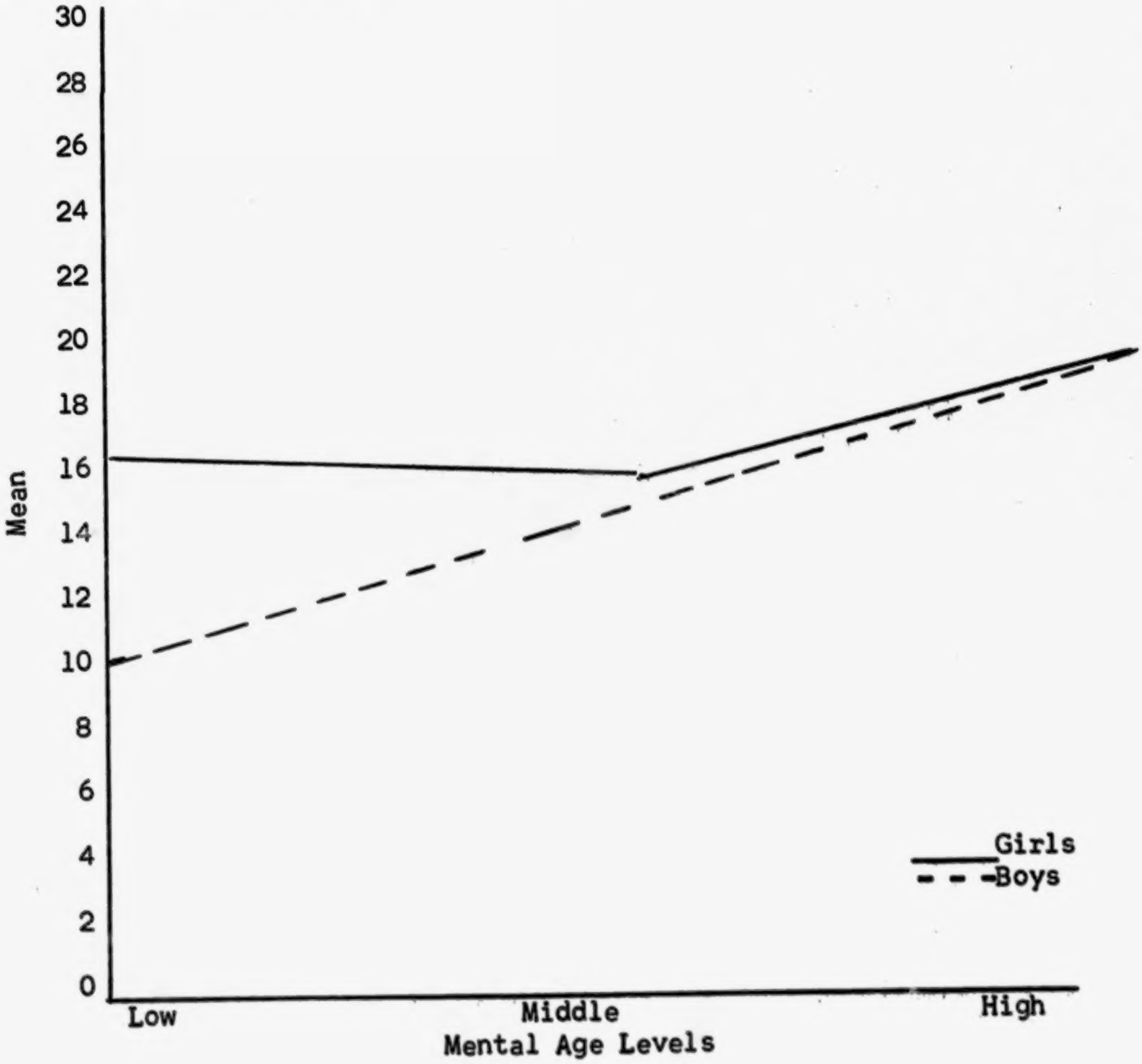

Fig. 15.—Interaction of Sex x Mental Age Levels (Variable: Spelling, Stanford Achievement Test)

TABLE 45

SUMMARY OF DECISIONS ON TESTS OF MAIN EFFECTS AND INTERACTION HYPOTHESES FOR CRITERION VARIABLES AT .01 AND .05 LEVELS, PROBLEM TWO

Final Variables	Method	Mental Age Levels	Sex	M.A.L. x Sex x Method	M.A.L. x Method	Sex x Method	Sex x S.E.L.
1. Pupil Reading Attitude (San Diego)	*		*				
Stanford Achievement Tests							
2. Word meaning	*	*					
3. Paragraph meaning	*	*	*				
4. Vocabulary	*	*			*		*
5. Spelling		*	*				*
6. Word study	*	*	**				
University of Pittsburgh Diagnostic Rating of Language Outcomes							
7. Understandings		*	*				
8. Habits		*	*				
9. Skills		*	*				
10. Personal responses		*	*			**	

*Accept the null hypothesis at .01 levels.
**Accept the null hypothesis at .05 levels.

TABLE 46

MEANS FOR EACH EXPERIMENTAL GROUP ON PUPIL READING ATTITUDE, WORD MEANING, AND PARAGRAPH MEANING

Methods	Mental Age Levels		
	1.	2.	3.
1	1. a. 19.64 b. 27.69 c. 33.89 a. 17.37 b. 28.52 c. 31.19 2.	1. a. 19.71 b. 24.22 c. 26.10 a. 18.82 b. 22.78 c. 24.30 2.	1. a. 17.75 b. 24.50 c. 35.13 a. 18.66 b. 20.67 c. 20.00 2.
2	1. a. 18.45 b. 26.30 c. 29.45 a. 17.88 b. 25.45 c. 28.15 2.	1. a. 18.73 b. 21.78 c. 24.94 a. 16.76 b. 21.40 c. 23.69 2.	1. a. 17.40 b. 18.10 c. 22.60 a. 16.88 b. 17.25 c. 18.75 2.

Key:

Method 1 = The Integrated Experience Approach
Method 2 = The Co-ordinated Basal Language Arts Approach
Mental Age Level 1 = High
Mental Age Level 2 = Middle
Mental Age Level 3 = Low

1. = Girls
2. = Boys
a. = Pupil Reading Attitude (San Diego Pupil Attitude Inventory)
b. = Word Meaning (Stanford Achievement Tests)
c. = Paragraph Meaning (Stanford Achievement Tests)

TABLE 47

MEANS FOR EACH EXPERIMENTAL GROUP ON VOCABULARY, SPELLING, AND WORD STUDY

Methods	Mental Age Levels 1.	 2.	 3.
1	1. a. 27.81 b. 17.31 c. 45.70 a. 28.89 b. 17.67 c. 48.30 2.	1. a. 22.99 b. 15.63 c. 40.25 a. 24.03 b. 13.77 c. 38.15 2.	1. a. 31.00 b. 16.13 c. 41.38 a. 20.00 b. 10.33 c. 30.83 2.
2	1. a. 26.34 b. 17.30 c. 43.02 a. 29.15 b. 18.00 c. 42.30 2.	1. a. 21.16 b. 16.26 c. 38.62 a. 21.36 b. 14.17 c. 36.33 2.	1. a. 16.00 b. 16.70 c. 34.90 a. 13.88 b. 9.88 c. 30.13 2.

Key:
Method 1 = The Integrated Experience Approach
Method 2 = The Co-ordinated Basal Language Arts Approach
Mental Age Level 1 = High
Mental Age Level 2 = Middle
Mental Age Level 3 = Low

1. = Girls
2. = Boys
a. = Vocabulary (Stanford Achievement Tests)
b. = Spelling (Stanford Achievement Tests)
c. = Word Study (Stanford Achievement Tests)

TABLE 48

MEANS FOR EACH EXPERIMENTAL GROUP ON LANGUAGE UNDERSTANDINGS, HABITS, SKILLS, AND PERSONAL RESPONSES

Methods		Mental Age Levels		
		1.	2.	3.
1	1.	a. 4.31 b. 4.19 c. 4.19 d. 4.14	a. 3.73 b. 3.48 c. 3.60 d. 3.73	a. 3.25 b. 2.88 c. 2.88 d. 3.13
	2.	a. 4.26 b. 3.83 c. 3.89 d. 3.89	a. 3.19 b. 2.75 c. 2.95 d. 2.97	a. 2.50 b. 2.33 c. 2.50 d. 2.50
2	1.	a. 4.32 b. 4.02 c. 4.23 d. 4.27	a. 3.67 b. 3.34 c. 3.44 d. 3.52	a. 3.00 b. 2.70 c. 3.10 d. 3.30
	2.	a. 4.12 b. 3.49 c. 3.73 d. 3.88	a. 3.49 b. 3.17 c. 3.19 d. 3.42	a. 2.50 b. 2.50 c. 2.25 d. 2.38

(University of Pittsburgh Diagnostic Rating of Language Outcomes)

Key:

Method 1 = The Integrated Experience Approach
Method 2 = The Co-ordinated Basal Language Arts Approach
Mental Age Level 1 = High
Mental Age Level 2 = Middle
Mental Age Level 3 = Low

1. = Girls
2. = Boys
a. = Understandings
b. = Habits
c. = Skills
d. = Personal Responses

Standard deviations, per variable, are given in Table 50. The investigators then attempted to check normative data presented in test manuals, if possible. Because of the nature of the variables considered or experimental nature of the evaluative instruments, this information could not be adequately gathered.

Further inspection of the correlation matrix reveals that relationships of .70 and above existed only on these variables:

Variable 4 and 5, 15
Variable 5 and 15
Variable 16 and 19
Variable 20 and 19
Variable 25 and 26, 29
Variable 29 and 24
Variable 33 and 34, 35
Variable 34 and 35, 36

Using .70 as a criterion reflecting a high degree of relationship, it is obvious that there were no initial variables that correlated highly with final variables considered. High degrees of intercorrelation existed between initial variables or between final variables. This evaluation further reveals that the initial testing period could have been minimized through eliminating tests or portions of these tests that correlated highly. Similar questions about highly correlated subtests on the final pupil evaluations can also be asked. Quite apparent is the fact that the Stanford Achievement Test subsections yielded highly related information.

In accord with these findings, the investigators felt that in this study it would be misleading to formulate predictive regression equations for teachers.

TABLE 49

KEY TO VARIABLE CODE FOR TABLES 50 AND 51

Variable Number Code	Variable Name	
1	Chronological age	
2	Mental age	
3	Phonemes	Murphy-Durrell Readiness Tests
4	Capital letters	
5	Lower letters	
6	Learning rate	
7	Pre-school experience	
8	Pattern copying	Thurstone-Jeffrey Tests
9	Identical forms	
10	Word meaning	Metropolitan Reading Readiness Tests
11	Listening	
12	Matching	
13	Numbers	
14	Copying	
15	Alphabet	
16	Teacher's age	
17	Teacher's degree	
18	Teacher's certification	
19	Teacher's total years experience	
20	Teacher's first grade experience	
21	Teacher's marital status	
22	Pupil absence	
23	Teacher absence	
24	San Diego Pupil Attitude Inventory	
25	Word meaning	Stanford Achievement Tests
26	Paragraph meaning	
27	Vocabulary	
28	Spelling	
29	Word study	
30	Overall teacher competence	
31	Banham Inventory	
32	Index of Social Position	
33	Understandings	University of Pittsburgh Diagnostic Rating of Language Outcomes
34	Habits	
35	Abilities	
36	Personal responses	
37	Fluency	Minnesota Tests of Creative Thinking--Task 1: Figure Completion
38	Flexibility	
39	Elaboration	
40	Originality	

TABLE 50

MEANS AND STANDARD DEVIATIONS OF INITIAL AND FINAL VARIABLES FOR THE TOTAL POPULATION SAMPLE

Variable Number Code	Mean	S.D.	Variable Number Code	Mean	S.D.
1	73.53	4.80	21	.67	.47
2	37.05	10.51	22	13.93	10.05
3	22.73	15.01	23	4.06	4.15
4	18.99	7.02	24	18.45	4.25
5	15.58	6.84	25	23.43	7.12
6	10.14	3.86	26	26.07	9.39
7	2.91	.81	27	23.58	7.31
8	21.74	6.78	28	15.44	6.39
9	17.56	7.98	29	39.68	9.97
10	8.43	2.91	30	3.09	1.21
11	9.09	2.59	31	21.33	3.58
12	7.69	3.97	32	69.11	25.13
13	12.64	4.35	33	3.65	1.13
14	8.06	3.13	34	3.31	1.19
15	9.43	4.64	35	3.44	1.19
16	44.58	10.70	36	3.54	1.17
17	2.08	1.56	37	9.94	.64
18	3.95	.30	38	7.02	2.09
19	18.06	11.46	39	12.35	10.05
20	12.90	8.96	40	6.69	4.27

Variable Number Code	1	2	3	4	5	6	7	8	9	10	11	12	13
1	1.00	.180	.071	.114	.139	.101	.037	.121	.010	.078	.050	.105	.113
2	.180	1.00	430	.315	.360	.285	.147	.409	.373	.403	.436	.466	.451
3	.071	.430	1 00	.458	.488	.406	.100	.403	.338	.467	.390	.443	.516
4	.114	.315	.458	1.00	.884	.445	.170	.282	.348	.365	.306	.419	.513
5	.139	.360	.488	.884	1.00	.505	.192	.297	.323	.352	.291	.417	.504
6	.101	.285	.406	.445	.505	1.00	.120	.251	.289	.265	.297	.308	.385
7	.037	.147	.100	.170	.182	.120	1.00	-.033	.103	.101	.116	.116	.095
8	.121	.409	.403	.282	.297	.251	-.033	1.00	.254	.217	.266	.392	.359
9	.010	.373	.338	.348	.323	.289	.103	.254	1.00	.325	.333	.383	.419
10	.078	.403	.467	.365	.352	.265	.101	.217	.325	1.00	.412	.330	.438
11	.050	.436	.390	.306	.291	.297	.116	.266	.333	.412	1.00	.415	.461
12	.105	.466	.443	.419	.417	.308	.116	.392	.383	.330	.415	1.00	.552
13	.113	.451	.516	.513	.504	.385	.095	.359	.419	.438	.461	.552	1.00
14	.111	.398	.367	.327	.326	.233	.115	.540	.273	.313	.329	.408	.421
15	.120	.391	.485	.807	.837	.491	.160	.279	.340	.392	.339	.481	.548
16	.085	.066	.155	.096	.078	.191	-.101	.002	.046	.041	.004	.004	.100
17	-.010	.085	.158	.178	.197	.147	-.016	.071	.198	.202	.158	.203	.192
18	-.002	-.079	-.077	-.042	-.047	-.082	-.020	-.170	-.018	-.029	-.048	.068	-.038
19	.048	.049	.150	.069	.066	.079	-.043	-.055	-.001	.084	.013	-.020	.102
20	.020	.072	.157	.161	.430	.094	.039	-.022	.089	.147	.088	.033	.150
21	-.006	-.089	-.030	.010	.034	-.021	.000	-.026	-.105	-.061	-.057	-.051	-.151
22	.011	-.040	.087	-.109	-.121	-.090	-.189	-.039	-.065	-.101	-.112	-.116	-.131
23	-.101	.050	.050	.033	-.030	.048	-.030	-.013	.196	.196	.161	.042	.121
24	.020	.042	.093	.178	.165	.147	.041	.078	.164	.093	.110	.057	.097
25	.032	.300	.524	.577	.575	.435	.115	.322	.336	.418	.320	336	.456
26	.051	.266	.464	.499	.480	.353	.042	.312	.263	.310	.251	.280	.348
27	.109	.355	.464	.413	.372	.307	.037	.338	.276	.459	.384	.340	.424
28	.035	.217	.297	.450	.425	.297	.133	.199	.294	.256	.197	.271	.302
29	.039	.342	.511	.540	.507	.373	.092	.353	.350	.373	.335	.355	.451
30	-.025	.037	.072	.157	.156	.121	.016	-.069	.111	.044	.117	.115	.068
31	.076	.356	.432	.546	.511	.327	.260	.268	.338	.331	.344	.399	.470
32	.065	-.218	-.382	-.363	-.383	-.285	-.174	-.173	-.264	-.365	-.202	-.221	-.308
33	.017	.344	.418	.482	.440	.314	.189	-.256	.378	.407	.380	343	.408
34	-.009	.329	.398	.499	.478	.320	.152	.260	.292	.402	.363	.322	.383
35	.008	.299	.395	.529	.490	.344	.164	.261	.343	.377	.363	.324	.383
36	.007	.319	.368	.525	.493	.347	.187	.266	.358	.396	.370	.340	.377
37	-.010	.060	.060	.030	.041	-.005	.071	.024	.042	.035	.039	-.008	.054
38	-.034	.098	.200	.251	.240	.195	.099	.167	.202	.136	.124	.189	.212
39	.024	.044	.048	.001	.024	.017	-.023	.146	.017	.010	.043	.069	.003
40	-.007	.048	.127	.074	.074	.041	-.007	.096	.082	.069	.082	064	.079

TABLE 51

CORRELATION MATRIX OF INITIAL AND FINAL VARIABLES FOR THE TOTAL POPULATION SAMPLE

13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
.113	.111	.120	.085	-.010	-.002	.048	.020	- 006	.011	-.101	.020	.032	.051	.109
.451	.398	.391	.066	.085	-.079	.049	.072	-.089	-.040	.050	.042	.300	.266	.355
.516	.367	.485	.165	.158	-.077	.150	.157	-.030	-.087	.050	.093	.524	.464	.464
.513	.327	.807	.096	178	- 042	.069	.161	.010	-.109	.033	.178	.577	.499	.413
.504	.326	.837	.078	.197	- 047	.066	.430	.034	-.121	-.030	.165	.575	.480	.372
.385	.233	.491	.191	.147	-.082	.079	094	-.021	-.090	.048	.147	.435	.353	.307
.095	.115	.160	-.101	-.016	-.020	-.043	.039	.000	-.189	-.030	.041	.115	.042	.037
.359	.540	.279	.002	.071	-.170	-.055	-.022	-.026	-.039	-.013	.078	.322	.312	.33
.419	.273	.340	.046	.198	-.018	-.001	.089	-.105	-.065	.196	.164	.336	.263	.27
.438	.313	.392	.041	.202	-.029	.084	.147	-.061	-.101	.196	.093	.418	.310	.45
.461	.329	.339	.004	.158	-.048	.013	.088	-.057	-.112	.161	.110	.320	.251	.38
.552	.408	.481	.004	.203	-.068	-.020	.033	-.051	-.116	.042	.057	.336	.280	.34
1.00	.421	.548	.100	.192	-.038	.102	.150	-.151	-.131	.121	.097	.456	.348	.42
.421	1.00	.350	-.093	.131	-.075	-.046	-.006	.128	-.102	.104	.071	.365	.270	.29
.548	.350	1.00	.067	.167	-.091	.020	.083	.002	-.094	.028	.118	.556	.496	.38
.100	-.093	067	1.00	-.121	-.087	.826	.640	-.057	-.001	-.061	.134	.074	.192	.15
.192	.131	.167	-.121	1.00	.154	-.118	-.019	.084	006	.201	.041	.144	.127	.18
-.038	-.075	-.091	-.087	.154	1.00	.024	.103	-.031	.024	.122	.045	-.115	-.088	-.07
.102	-.046	.020	.826	-.118	.024	1.00	.840	-.213	-.010	-.109	.130	.077	.141	.1
.150	-.006	.083	.640	-.019	.103	.840	1.00	-.383	-.064	-.112	.130	.118	.156	.18
-.151	.128	.002	-.057	.084	-.031	- 213	-.383	1.00	.027	.172	-.021	-.048	- 053	-.0
-.131	-.102	-.094	-.001	.006	.024	-.010	-.064	.027	1.00	-.028	-.116	-.179	-.086	-.0
.121	.104	.028	-.061	.201	.122	-.109	-.112	.172	-.028	1.00	.048	.063	.031	.0
.097	.071	.118	.134	041	.045	.130	.130	-.021	-.116	.048	1.00	.240	.093	.1
.456	.365	.556	.074	.144	-.115	.077	.118	-.048	-.179	.063	.240	1.00	.709	.5
.348	.270	.486	.182	.127	-.088	.141	.156	-.053	-.086	.031	.093	.709	1.00	.5
.424	.294	.387	.150	.181	-.076	.137	.181	-.028	-.082	.082	.150	.522	.552	1.0
.302	.300	.394	.099	.066	-.090	.083	.119	-.083	-.141	.104	.160	.541	.490	.3
.451	.342	.511	.090	.163	-.049	.073	.117	-.051	-.137	.099	.181	.760	.668	.5
.068	.030	.110	.329	.109	.311	.450	.536	-.021	-.067	.120	.215	.097	.056	.1
.470	.398	.508	.124	.171	-.088	.114	.164	.010	-.171	.065	.169	.444	.323	.3
-.308	-.252	-.376	-.119	-.249	.137	-.145	-.115	-.094	.122	-.042	-.077	-.439	-.388	-.3
.408	.383	.436	.113	.098	-.021	.167	.185	.052	-.188	.128	.247	.577	.458	.
.383	.364	.453	.089	.079	-.053	.159	.207	.030	-.195	.069	.216	.614	.503	.
.393	.354	.471	.072	.120	-.046	.101	.193	.005	-.187	.086	.182	.630	.527	.
.377	.342	.461	.057	.125	-.041	.088	.169	-.013	-.201	.139	.203	.598	.494	.
.054	.049	.071	.005	-.032	-.081	-.015	-.011	.015	.026	.081	-.010	.057	.079	.
.212	.139	.242	.062	.033	.055	.021	.085	-.017	-.075	.118	.137	.319	.250	.
.003	.103	.007	-.096	.059	.006	-.167	-.194	.207	-.005	.044	.053	-.003	-.005	.
.079	.054	.059	-.029	.066	-.005	-.020	-.017	.044	.043	.009	.058	.099	.074	.

27	28	29	30	31	32	33	34	35	36	37	38	39	40
.109	.035	.039	-.025	.076	.065	.017	-.009	.008	.007	-.010	-.034	.024	-.007
.355	.217	.342	.037	.356	-.218	.344	.329	.299	.319	.060	.098	.044	.048
.464	.297	.511	.072	.432	-.382	.418	.398	.395	.368	.060	.200	.048	.127
.413	.450	.504	.157	.546	-.363	.482	.499	.529	.525	.030	.251	.001	.074
.372	.425	.507	.156	.511	-.383	.440	.478	.490	.493	.041	.240	.024	.074
.307	.297	.373	.121	.327	-.285	.314	.320	.344	.347	-.005	.195	.017	041
.037	.133	.092	.016	.260	-.174	.189	.152	.154	.187	.071	099	-.023	-.007
.338	.199	.353	- 069	.268	-.173	-.256	.260	.261	.266	.024	.167	.146	.096
.276	.294	.350	.111	338	-.264	.378	.292	.343	.358	.042	.202	.017	.082
.459	.256	.373	.044	.331	-.365	.407	402	377	396	.035	.136	.010	.069
.384	.197	.335	.117	.344	-.202	.380	.363	.363	.370	.039	.124	.043	.082
.340	.271	.355	.115	.399	-.221	.343	.322	.324	.340	-.008	.189	.069	.064
.424	.302	.451	.068	.470	-.308	.408	.333	.383	.377	.054	.212	.003	.079
.294	.300	.342	.030	.398	-.252	.383	.364	.354	.342	.049	.139	.103	.054
.387	.394	.511	.110	.508	-.376	.436	.453	.471	.461	.071	.242	.007	.059
.150	.099	.090	.329	.124	-.119	.113	.089	.072	.057	.005	.062	-.096	-.029
.181	.066	.163	.109	.171	-.249	.098	.079	.120	.125	-.032	.033	.059	.066
-.076	-.090	- 049	.311	-.088	.137	-.021	-.053	-.046	-.041	-.081	.055	.006	-.005
.137	.083	.073	.450	.114	-.145	.167	.159	.101	.088	-.015	.021	-.167	-.020
.184	.119	.117	.536	.164	-.115	.185	.207	.193	.169	-.011	.085	-.194	-.017
-.028	-.083	-.051	-.021	.101	-.094	.052	.030	.005	-.013	.015	-017	.207	.044
-.082	-.141	-.137	-.067	-.171	.122	-.188	-.195	-.187	-.201	.026	-.075	-.005	.043
.082	.104	.099	.120	.065	-.042	.128	.069	.086	.139	.081	.118	.044	.009
.150	.160	.181	.215	.169	-.077	.247	.216	.182	.203	-.016	.137	053	.058
.522	.541	.750	.097	.444	-.439	.577	.614	.630	.598	.057	.319	-.003	.099
.552	.480	.668	.056	.323	-.388	.458	.503	.527	.494	.079	.250	-.005	.074
1.00	.362	.568	.119	.329	-.371	.451	.437	.442	.426	.051	.136	.048	.123
.362	1.00	.525	.068	.368	-.351	.444	.464	.488	.493	.031	.224	-.036	.061
.568	.525	1.00	.098	.447	-.357	.539	.549	.584	.550	.053	.291	.040	.102
.119	.068	.098	1.00	.065	.052	.209	.166	.128	.141	-.021	.139	-.114	-.015
.329	.368	.447	.065	1.00	-.321	.502	.504	.533	.527	-.002	-.264	.038	.090
-.371	- 351	-.357	.052	-.321	1.00	-.290	-.293	-.260	-.257	-.016	-.147	-.011	-.076
.457	.441	.539	.209	.502	-.290	1.00	.838	.830	.832	.023	.191	-.015	.064
.437	.464	.549	.166	.504	-.293	.838	1.00	.848	.866	-.024	.204	-.017	.045
.442	.438	.584	.128	.533	-.260	.830	.848	1.00	.880	.054	.257	-.029	.055
.426	.493	.550	.141	.527	-.257	.032	.866	.880	1.00	-.002	.228	-.041	.017
.051	.031	.053	-.021	-.002	-.016	.023	-.024	.054	-.002	1.00	.121	.047	.076
.136	.224	.291	.139	-.264	-.147	.191	.204	.257	.228	.121	1.00	.125	-.047
.043	-.036	.040	-.114	.038	-.011	-.015	-.017	-.029	-.041	.047	.125	1.00	.446
.123	.061	.102	-.015	.090	-.076	.064	.045	.055	.017	.076	-.047	.446	1.00

V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A. Summary

The major purpose of this study was to examine the effects and outcomes of two instructional approaches, the Co-ordinated Basal Language Arts Approach and the Integrated Experience Approach to Communication, on pupils' language development in an urban setting.

More specifically, this investigation involved the following problems: an analysis of the effects of socio-economic levels, methods, and sex on pupil achievement in first grade; an analysis of the effects of mental age levels, methods, and sex on pupil achievement in first grade; and the feasibility of predictive regression analyses in first grade.

The pupils in this study were selected from 241 first grades in the Pittsburgh Public Schools. Approximately 600 pupils in twenty-four classes, representing three socio-economic levels and ranging in I.Q.'s from 80-170, were randomly assigned to the two instructional approaches. In order to reaffirm that the pupils assigned in the instructional approaches were not statistically significantly different at the outset of the investigation, multi-variate and univariate analyses of variance between pupils in the two experimental methods were performed on the basis of initial readiness test scores, mental age scores, scores on the Hollingshead-Redlich Index of Social Position, teacher data, and other pupil data.

The investigation began in September, 1964. Initial pupil evaluations were obtained during a two-week period, September 21-

October 2, following the initially prescribed two weeks' orientation period for pupils prior to preliminary testing. Initial evaluative measures used included: Pintner-Cunningham Primary Test, Pintner General Ability Tests, Form for Grade 1; Detroit Word Recognition Test, Form B for Primary Grades; Individual Record Check List—Maturity Level for School Entrance and Reading Readiness for Kindergarten and First Grade by Katharine Banham; Murphy-Durrell Diagnostic Reading Readiness Test; Metropolitan Readiness Tests; and the Thurstone-Jeffrey Identical Forms and Pattern Copying Tests. The socio-economic status of pupils was analyzed by using the weighted score of the Hollingshead and Redlich Index of Social Position. Because of the diversity in quality of dwellings on many streets in the city of Pittsburgh, photographic evidence, charting, and rating of each pupil's residence was essential in arriving at the composite social index. Information was also obtained from school records per pupil.

Additional related teacher, pupil, school, and community information secured included:

1. Pupil: chronological age, amount of pre-first grade experience, and total number of days absent.
2. Teacher: age, highest degree held, sex, type of teaching certificate, total number of years of teaching experience, number of years of first grade teaching experience, marital status, number of children, attitude as measured by the San Diego Teacher Attitude Inventory, number of days absent, attrition, and rating of competence.
3. School: length of school day, length of school year, number of first grade rooms in the school district, type

of library facilities available to the class, class size, and cost per pupil in average daily attendance.

4. Community: median number of years of education completed by adults living within the school's community, median income in the community, population of the community in which the school is located, and type of community.

At the beginning of the research study and continuing throughout, in-service meetings were scheduled for all twenty-four participating teachers and their supervisors. Supervision and consultation services were also available to the twenty-four first grade teachers. In both experimental approaches the participating teachers were representative of a range from poor to superior in teaching competencies as evaluated through the criteria selected by the co-ordinating center at the University of Minnesota. The twelve teachers using the Co-ordinated Basal Language Arts Approach as well as the twelve teachers employing the Integrated Experience Approach to Communication were introduced to materials they had not used before. We hoped, thus, to reduce and balance the possible Hawthorne effect produced when teachers become enthusiastic about new materials.

Prior to the outset of the instructional program, the attention of all twenty-four teachers was directed toward common desired language outcomes for first graders. These were charted, discussed at in-service meetings, and provided to all participating teachers. Thus, though materials, procedures, and approaches were different instructional goals were commonly defined to assure justifiable final assessment for both experimental groups in all language learning aspects.

Teachers in both the Co-ordinated Basal Language Arts Approach and the Integrated Experience Approach to Communication were given some assistance in interpreting the preliminary test results. This information was intended as an initial diagnostic assessment of pupils' strengths and needs. Accordingly, recommendations for initially individualized instruction were given.

The prescribed total of 140 instructional days was completed on May 14, 1965. Final pupil total group and individual evaluations of the randomly selected subset population followed.

Preliminary and final data were examined through a "3 x 2 x 2" multi-variate and univariate analysis of variance, covariance factorial design. Data processing involved use of the 7090 IBM Electronic Computor Model at the University of Pittsburgh Computation and Data Processing Center. The multi-variate and univariate analysis of variance, covariance computer program was designed by Dr. Charles Hall in the nationwide research, "Project Talent," and was adjusted for the first grade reading study. Approximately 500 pupils comprised the final total pupil population at the close of the first grade school term. Population losses are attributed to population mobility and failure of teachers to conform to the experimental conditions, per instructional approach.

Main effects and interaction hypotheses were as follows: Between Methods, Between Socio-economic Levels, Between Sexes, Socio-economic Levels x Sex x Method, Socio-economic Levels x Method, Sex x Method, Sex x Socio-economic Levels; Between Mental Age Levels, Mental Age Levels x Sex x Method, Mental Age Levels x Method, and Sex x Mental Age Levels.

The twenty-six criterion variables considered included:

1. Reading attitude as measured by the San Diego Pupils' Inventory of Reading Attitudes.
2. Word meaning, paragraph meaning, vocabulary, spelling, and word study as measured with the Stanford Achievement Test, Primary Battery I, Form X.
3. Language understandings, language applications, and personal responses in communicating as indicated by an informally designed diagnostic rating of language outcomes for first graders.
4. Fluency, flexibility, elaboration, and originality as measured with Task 1: Figure Completion, Abbreviated Form VII, Minnesota Tests of Creative Thinking.
5. Fluency, flexibility, elaboration, and originality as measured by Task 3: Product Improvement, Abbreviated Form VII, Minnesota Tests of Creative Thinking.
6. Rate and accuracy of oral reading as indicated by the Gilmore Oral Reading Tests, Form A.

The following are some findings on the univariate analysis of variance for differences between the methods, between pupils at three socio-economic levels, between sexes, and the interactions between: Sex x Socio-economic Level x Method, Socio-economic Level x Method, Sex x Method, and Sex x Socio-economic Levels.

1. Pupils in the Integrated Experience Approach to Communication had statistically significantly higher mean scores at the .01 level of confidence than pupils in the Co-ordinated Basal Language Arts Approach on the word meaning, paragraph meaning, vocabulary, and

word study sections of the Stanford Achievement Test and on the San Diego Pupil Attitude Inventory.

2. Pupils in the Integrated Experience Approach to Communication had statistically significantly higher mean scores at the .05 level of confidence than pupils in the Co-ordinated Basal Language Arts Approach on the Gates Word List, Karlsen Word List, Creative Writing Mechanics Ratio, and the Originality and Elaboration Indices of the Product Improvement Task, Minnesota Tests of Creative Thinking.

3. When considering total pupils at each socio-economic level, statistically higher mean scores at the .01 or .05 levels were apparent between pupils in the upper levels than those in middle and lower levels. Pupils at the middle socio-economic levels had higher mean scores than those at the lower socio-economic levels on all portions of the Stanford Achievement Test, University of Pittsburgh Diagnostic Rating of Language Outcomes for First Graders, Flexibility and Originality Indices of the Figure Completion Tasks, Minnesota Tests of Creative Thinking, the Gates Word List, Gilmore Oral Reading Rate, and the Karlsen Phonemic Word Test.

4. The total girls had statistically higher mean scores at the .01 level than boys on the word meaning, paragraph meaning, spelling and word study sections of the Stanford Achievement Test, the Diagnostic Rating of Language Outcomes for First Graders, the Gilmore Oral Reading Test Rate Assessment, and the Fluency Index of the Product Improvement Task, Minnesota Tests of Creative Thinking.

5. Statistically significant interactions were apparent between sex and socio-economic levels and Sex x Method at the .05 and .01 levels respectively on the paragraph meaning portion of the

Stanford Achievement Test and the Minnesota Product Improvement Task.

At each socio-economic level, girls in the Integrated Experience Approach had higher mean scores on all but the spelling portion of the Stanford Achievement Test than did girls in the Co-ordinated Basal Language Arts Approach. Boys in the upper and middle socio-economic levels in the Integrated Experience Approach to Communication had higher mean scores than boys in the Co-ordinated Basal Language Arts Approach on all portions of the Stanford Achievement Test. At the lower socio-economic level, boys in the Co-ordinated Basal Language Arts Approach had higher mean scores than boys in the Integrated Experience Approach to Communication. The advantage of basal boys in the lower socio-economic level is attributed to their considerably higher initial readiness scores than boys in the experience approach.

6. Comparable patterns of mean achievement by sex and socio-economic levels were noted on the Gilmore Oral Reading Test, and the Fry, Gates, and Karlsen Word Pronunciation Tests.

7. At the .01 level statistically significant differences were evident between pupils at mental age levels on all subsections of the Stanford Achievement Test and University of Pittsburgh Diagnostic Rating of Language Outcomes.

8. Significant interactions at the .01 level were evident on the vocabulary subtest between Mental Age Levels x Method and Sex x Mental Age Levels.

9. A significant interaction of Sex x Mental Age Levels was noted at the .01 level on the spelling subtest. At the .05 level a

significant interaction was reported between Sex x Method on the Personal Responses subsection, University of Pittsburgh Diagnostic Rating of Language Outcomes.

10. Consistently on those variables in which statistically significant differences were noted, pupils in the Integrated Experience Approach to Communication had higher mean scores than pupils in the Co-ordinated Basal Language Arts Approach within mental age levels.

11. A high degree of variable relationships was noted between some initial variables. Similar relationships existed between some final variables.

B. Conclusions

Since this investigation was conducted for approximately one year, conclusions drawn will be limited until the completion of the third year in this longitudinal study. Conclusions drawn at the close of the first year are as follows:

1. The first year of reading instruction is most important in a pupil's future successes in reading. Pupils at all three socio-economic levels, at all three mental age levels, and regardless of sex are more successful generally and have a more positive attitude toward reading when taught through an Integrated Experience Approach to Communication than through a Co-ordinated Basal Language Arts Approach.

2. Positive changes in teacher's attitudes toward more individualized instructional innovations can occur as an outcome of added in-service educational workshops, supervision, and demonstration.

3. Per class costs in purchasing materials for an Integrated Experience Approach to Communication are comparable to per class costs in purchasing basal language arts materials and supplements.

4. Though smaller class unit size is desirable, class enrollments totaling forty to forty-two pupils do not preclude management and organization for more individualized instruction.

5. Regardless of method, superior teachers are more successful than average and poor teachers.

6. Supervisory attitudes toward instructional innovations have an observed effect on teacher performance.

7. In spite of pupils' initial limitations in readiness for reading, teachers can accommodate for and provide more diversified instruction through an Integrated Experience Approach to Communication.

C. Recommendations

The investigators sincerely feel that the findings in this study are testimony of the adequacies of the instructional approaches evaluated. Nevertheless, the following are suggested:

1. More attention should be directed toward a further study of the degree to which interrelationships occur or exist during pupils' language learnings.

2. Care should be taken in selecting initial and final pupil evaluative instruments so that wasteful repetitive evaluations are not made.

3. Concern should be fostered for developing procedures or instruments through which teachers might assess pupils' language potentials, levels, and needs in order to select an eclectic well-balanced individualized instructional mode.

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APPENDICES

APPENDIX A

PRELIMINARY CHARTS OF COMMON DESIRED LANGUAGE OUTCOMES FOR PRIMARY GRADERS

GENERAL EXPECTED INSTRUCTIONAL OUTCOMES FOR PRIMARY PUPILS

A. UNDERSTANDINGS

The Child knows that:	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
1. Perceptions can be more vivid if maximal sensory stimuli are recognized.	X	X		X		X
2. Gestures, facial expressions, and other physical movements can be means of communicating without words or can be means for more adequate interpretation of verbal communication.	X			X		
3. Ideas, concepts, desires, feelings, information, and experiences can be expressed through appropriate language.	X	X	X		X	X
4. Information and pleasure can be acquired or shared through verbal and non-verbal acts of communication.	X	X	X	X	X	X
5. Past, present, and future can be expressed and sensed.	X	X	X		X	X
6. Each literary form has a distinctive characteristic.	X	X	X	X	X	X
7. There are appropriate times and places for specific communication acts.	X	X	X	X	X	X
8. One's personal worth can be manifested, recognized, and enhanced with growth toward language maturity.	X	X	X	X	X	X
9. Arts and acts of communication grow and change in our mobile society.	X	X	X	X	X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
10. There are many levels of verbal and non-verbal communication, each appropriate to a specific occasion or situation.	X	X	X	X	X	X
11. Effective communication is the end product of adequate perception, reception, apprehension, reflection, and expression.	X	X	X	X	X	X
12. Verbal and non-verbal acts are employed to convey or represent real or contrived objects, people, events, situations, relationships, and interactions.	X	X	X	X	X	X
13. There is some ordering or sequencing within communication processes.	X	X	X	X	X	X
14. Communicative processes are stabilized by standards and guidelines of linguistic structure or demonstration.	X	X	X	X	X	X
15. Facility in one act of communication can re-inforce facility in other communication processes.	X	X	X	X	X	X
16. Effective self-evaluation generates further growth.	X	X	X	X	X	X

B. APPLICATIONS

The child manifests growth in:

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
1. The habit of and ability to evaluate personal performance in all aspects of communication acts.	X	X	X	X	X	X
2. The ability to effectively organize perceptual stimuli, generalize them, set concepts, and interpret them to others.	X	X	X	X	X	X
3. The timely employment of non-verbal signals when participating in an act of communication.		X	X	X		X
4. The ability to and habit of obtaining pleasure through a variety of language media.	X	X	X		X	X
5. The habit of employing courtesy in all communication acts.	X	X	X	X	X	X
6. The ability to use verbal and non-verbal communicative processes functionally.	X	X	X	X	X	X
7. The ability to recognize personal purposes for communicating.	X	X	X	X	X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
8. The habit of pursuing tasks independently.	X	X	X		X	X
9. The ability to acquire and employ a diversified vocabulary.	X	X	X		X	X
10. The ability to adhere to standards of established linguistic structure.	X	X	X	X	X	X
11. The habit of perceiving , listening, speaking, reading, non-verbal signaling, or writing without overt or hidden personal bias.	X	X	X	X	X	X
12. The ability to use reference sources in substantiating perceptions, apprehension, reflection, and expression.	X	X	X	X	X	X
13. The ability to constructively participate in communication acts.	X	X	X	X	X	X
14. The ability to interpret the direct or implied.	X	X	X	X	X	X

C. PERSONAL RESPONSES

The child manifests :

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
1. Growing respect for the contribution of others through communication.	X	X	X	X	X	X
2. A growing desire to participate effectively in functional communicative processes.	X	X	X	X	X	X
3 3. A desire to extend, expand, and enrich his personal life through the six language arts.	X	X	X	X	X	X
4. Enjoyment and appreciation of beauty in literature and life.	X	X	X	X	X	X
5. The desire to make worthwhile contributions.			X	X	X	
6. Flexibility, fluency, and originality in creative communication.	X	X	X	X	X	X
7. Increasing confidence and security in communication acts.	X	X	X	X	X	X
8. A continuing intensity of intellectual curiosity.	X	X	X	X	X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
9. An appreciation for the source and modes of acquiring information.	X	X	X	X	X	X
10. Kind acceptance of the differences of others as manifested through communication.	X	X	X	X	X	X
11. Growing Appreciation of varied literary form.		X	X		X	X

MASTERY CHECKLIST OF SPECIFIC DESIRABLE INTEGRATED OUTCOMES WITHIN THE PRIMARY BLOCK

UNDERSTANDINGS	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Perceptual-Conceptual Development						
Specific sounds, words, actions, and ideas are produced by or represent concrete objects and true to life situations.	X	X	X	X	X	X
Through use of all the senses things can be interpreted more meaningfully.	X	X	X	X	X	X
We can determine how people feel by their overt expressions: frightened, happy, angry, sad, and etc.	X	X	X	X	X	X
Each sound, object, design, word, figure, and idea is unique in its class.	X	X	X	X	X	X
Sounds we hear, produce, or see represented by words can be near or far, high or low, loud or soft.	X	X	X		X	X
Pictures, graphs, and charts are illustrations of ideas.	X				X	X
Some stories we read, listen to, tell, or write can be about children like ourselves.	X	X	X		X	X
Imaginative thinking can be nurtured and expressed through acts of communication.	X	X	X	X	X	X
Some words, phrases, gestures, and sentences represent exaggerations.	X	X	X	X	X	X
We express our thoughts, feeling, observations, and ideas with gestures, facial expressions, physical movements, words, phrases, and sentences.	X	X	X	X	X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Words such as happy, lost, buzz, and others help us to mentally organize and express how we feel, how things sound, and how things look	X	X	X		X	X
When we describe, we tell or show how something looks, tastes, smells, feels, or sounds.	X	X	X	X	X	X
Name words, action words, and describing words in sentences make stories more interesting and easy to interpret.		X	X		X	X
Specific character type can be illustrated in stories and poems through description.		X	X		X	X
Words such as early, late, winter, summer, are clues to when events occur.	X	X	X		X	X
Gestures, words, sounds, ideas, and events can be categorized, classified, and related.	X	X	X	X	X	X
Use of a precise word or appropriate gesture aids to clarify thoughts, ideas, and information interpreted.	X	X	X	X	X	X
Language is a means through which past, present, and future can be expressed or sensed.	X	X	X	X	X	X
Words that have sensory appeal are more meaningful.	X	X	X		X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Language is a tool that permits memories to be revived.	X	X	X	X	X	X
Absurdities often make acts of communication vehicles for humor.	X	X	X	X	X	X
Comparison is used to show similarity; contrast to show differences.	X	X	X		X	X
Writers or speakers may deliberately elect topics or use words which arouse an emotional reaction to achieve an effect.	X	X	X		X	X
Prejudice refers to opinion often formed without substantiation of fact.	X	X	X		X	X
Physiological Aspects						
We assume a more relaxed position when we listen or read for pleasure.		X				X
A reasonable rate of speaking and writing insures added clarity for the listener or reader.		X				X
Position and the way a writing instrument is held can affect legibility.					X	
Moving the tongue and shaping the lips properly helps us produce sounds correctly.			X			
Eyes play as important a role in reading as do the vocal mechanism in speaking, motor mechanisms in gesturing or writing, and ears in hearing. All affect perceiving	X	X	X	X	X	X

Mechanics	PERCEIVING	LISTENING	SPEAKING	NON VERBAL: SIGNALING	WRITING	READING
Some words sound alike at the beginning; Some words look alike at the beginning.	X	X				X
Some words rhyme.		X				X
Some words sound alike at the ending; some words look alike at the ending;	X	X				X
For every small letter, there is a capital letter in our alphabet.	X				X	X
Correct spelling is as important to the reader as is clear articulation to a listener.	X				X	
Consonant digraphs such as wh, ch, and ng, make a new sound.		X				X
Compound words are composed of two words that make a new word.		X			X	X
A contraction is a shortened form of two words.		X			X	X
Simple possession is indicated by adding an 's to naming words.		X			X	X
A long vowel sounds like the name of the vowel.		X	X			X
A vowel in the middle of a one syllable word is usually short.		X	X			X
A single vowel letter at the end of a word is usually long.		X	X			X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
A vowel followed by r is usually neither long not short.		X	X			X
When the letters oa are together in a word, the o is usually long, and the a silent.		X	X			X
The first word of a paragraph is indented.		X	X			X
Words having a double e usually have the long e sound.		X	X			X
When words end with a silent e the preceding a or i is long.		X	X			X
In ay the y is silent and gives a its long sound.		X	X			X
When the letter i is followed by the letters gh, the i usually stands for its long sound and the gh is silent.		X	X			X
When a follows w in a word, it may have the sound a as in was.		X	X			X
When e is followed by w the vowel sound is sometimes the same as represented by oo.		X	X			X
The two letters ow make the long o sound.		X	X			X
W is sometimes a vowel and follows the vowel digraph rule.		X	X			X
When y is the final letter in a word, it usually has a vowel sound.		X	X			X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
When y is used as a vowel in words, it sometimes has the sound of long i.		X	X			X
The letter a sometimes has the same sound as (o) when followed by l, w or u.		X	X			X
When a word has only one vowel letter, the vowel sound is likely to be short.		X	X			X
When there is one e in a word that ends in a consonant, the e usually has a short sound.		X	X			X
When a is followed by r and final e, we expect to hear the sound heard in care		X	X			X
When c and h are next to each other, they make only one sound.		X	X			X
Ch is usually pronounced as it is in kitchen, catch, and chair, not like sh.		X	X			X
When the letter c is followed by o or a the sound of k is likely to be heard.		X	X			X
The letter g often has a sound similar to that of j in jump when it precedes the letter i or e.		X	X			X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL S.IGNALING	WRITING	READING
When ght is seen in a word, gh is silent.		X	X			X
When a word begins with kn, the k is silent.		X	X			X
When a word begins with wr, the w is silent.		X	X			X
When two of the same consonants are side by side only one is heard.		X	X			X
When a word ends in ck, it has the same last sound as in look.		X	X			X
In most two-syllable words, the first syllable is accented.		X	X			X
One vowel letter in an accented syllable has its short sound.		X	X			X
In many two-and three- syllable words, the final e lengthens the vowel in the last syllable.		X	X			X
If the first vowel sound in a word is followed by two consonants, the first syllable usually ends with the first of the two consonants.		X	X			X
If the first vowel sound in a word is followed by a single consonant, that consonant usually begins the second syllable.		X	X			X
If the last syllable of a word ends in le, the consonant preceding the le usually begins the last syllable.		X	X			X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
When the first vowel element in a word is followed by th, ch, or sh, these symbols are not broken when the word is divided into syllables and may go with either the first or the second syllable.		X	X			X
The sounds p, b, m, w, and y, are produced with the lips.			X			
The sounds h, and wh are produced with breath and lips.			X			
The sounds t, d, and n, are tip of the tongue sounds.			X			
K, g, and ng, are back of the tongue sounds.			X			
The sounds for f and v are produced with the lips and teeth.			X			
Th as in "this" and th as in "the" are tongue teeth sounds.			X			
The sounds s, z, sh, zh, ch, and j are teeth sounds.			X			
L, and r, are tongue and voice sounds.			X			
In handwriting, all letters should lean the same way.					X	
Spaces between letters and words should be even when writing.					X	
All small letters should be evenly small and tall letters should be uniformly tall.					X	

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
In the lower case alphabet, every letter, except c and o is a straight down stroke in cursive writing.					X	
All downstrokes should be parallel.					X	
All letters in handwriting should rest on the line.					X	
When writing a word that ends in silent e, the final e is usually dropped before the addition of a suffix beginning with i.					X	
When a word ends in a consonant and y, the y is usually changed to i before adding all suffixes except those beginning with i. The y is not changed to i in adding suffixes to words ending in a vowel and y, or when adding a suffix beginning with i.					X	
The letter q is always followed by a "u" in common words.					X	
English words do not end with v.					X	
Functional Linguistics						
Levels of usage on the playground are less formal than those of the classroom.		X	X	X		
Humans possess the power of speech; animals do not.		X				
Our thoughts, ideas, desires, and feelings can be shared through communication acts.	X	X	X	X	X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
The first word of every sentence begins with a capital letter.	X				X	X
A period indicates the end of a declarative sentence.					X	X
A question mark indicates the end of an interrogative sentence.					X	X
A sentence is a complete thought; a phrase is a part of a complete thought.	X	X	X		X	X
A statement tells something; a question asks something.	X	X	X		X	X
Intonation, phrasing, cadence, inflection, stress, gestures, and pause effect mood and meaning.	X	X	X	X	X	X
The level of usage in books is usually more formal than that used in speaking.					X	X
A title helps us identify a persons' occupation or profession.		X	X		X	X
Sentences we hear, speak, or write are more interesting if beginnings are varied.		X	X		X	X
Precise word usage effects clarity.	X	X	X		X	X
The acts and arts of communication grow and change in our mobile culture.	X	X	X	X	X	X
There are natural recurring patterns in our language.	X	X	X	X	X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Poems may rhyme or have free form.		X	X		X	X
A paragraph is composed of sentences that tell about one idea.		X			X	X
Communication is possible without speech.	X	X	X	X	X	X
There are many different languages and many dialectic patterns within a language.		X	X		X	X
Some words are opposite in meaning.	X	X	X		X	X
Newly coined words result when something needs to be named.	X	X	X		X	X
Some words sound the same but have different meanings and spelling.		X	X		X	X
Picture words add color to writing.		X	X		X	
The spelling of some words remains the same but pronunciation changes. (lead, lead)		X	X		X	X
Sentence fragments are acceptable during informal conversations.		X	X			
Dialects are the differences in words, sounds, stress, phrasing, and grammatical habits that are characteristic of different regions.		X	X			

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Sentences should not contain more than one "no" word.		X	X		X	X
Initial letters and syllables often assume word values (UNICEF)		X	X		X	X
An exclamatory sentence expresses surprise or some other strong feeling.		X	X		X	X
Some words give clues to whether the sentence begins, holds together, or closes an idea.		X	X		X	X
Names of important people, places, events, things, months, and holidays begin with a capital letter.					X	X
Time, number, and situation affect the form of action words.		X	X		X	X
Periods are used at the end of a sentence, after an abbreviation, and after initials in proper names.					X	X
Commas are used to separate the date from the year, to set off the city from the state, after the greeting and closing of a letter, to set off quotations, and to set off words in a series.					X	X
The colon is used after the greeting in a business letter, before a long series, and to separate the hour from the minutes.					X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
The apostrophe is used to show possession and to show when letters have been omitted.					X	X
Quotation marks set off dialogue.					X	X
Comprehension						
Words, gestures, and facial expressions may reflect more than one meaning.	X	X	X	X	X	X
Meaning is a function of context or situation.	X	X	X	X	X	X
Writing is speech written down.			X		X	X
Ideas which are expressed in writing, speaking or gesturing can be interpreted by others.		X	X		X	X
A main idea is the most important event in a story.		X			X	X
A title often gives the main idea.		X	X		X	
Printed symbols represent objects or actions.	X				X	X
Study Techniques						
Previewing is an organized rapid coverage of material enabling one to view the overall.	X	X				X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Listening, perceiving, speaking, writing, and reading are ways to obtain information or pleasure.	X	X	X		X	X
There are proper times and appropriate places for specific communication acts.	X	X	X	X	X	X
Ideas, objects, and events shared should be of literary quality, interest, or importance.	X		X		X	
Books and other materials in a library are arranged in scme order.	X					X
A table of contents helps one to quickly locate a story in a book through a listing of the page on which it can be found.					X	X
Some books contain section headings that give clues to what that portion of the book will tell.					X	X
Dictionaries are used to find the meanings of unknown words.						X
Words in dictionaries are listed in alphabetical order.						X
Guide words, found at the top and bottom of a page in the dictionary, help in locating a word quickly.						X
Encyclopedias are used when we want to find out the answer to some question.						X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
The volumes and topics of encyclopedias are marked in an alphabetical order.						X
A purpose should be recognized before one begins to perceive, listen, speak, write, signal, or read.	X	X	X	X	X	X
Evaluating involves use of some prescribed standard.	X	X	X	X	X	X
Some types of information can be best obtained through an interview or visit to a place.	X	X	X		X	
Pictures on book cover or in books usually help us to understand the print in books.	X				X	X
Books about one subject are grouped together on library shelves.	X					X
A dictionary contains the spellings of words.						X
Abbreviations of words can be found in dictionaries.						X
A card catalog is a listing of books that can be found in the library.	X					X
A person's name is alphabetized according to the last name.					X	X
Taking notes while reading, observing, or listening is a way of remembering information.	X	X			X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
A dictionary gives more than one meaning for many words.						X
Newspapers contain information about people, places, and events.					X	X
Aesthetic and Cultural Appreciations						
In some stories and poems, animals and objects possess characteristics and speech like humans.	X	X	X		X	X
Some stories are about famous people and places.		X	X		X	X
Some stories contain elements of adventure, humor, suspense, or nonsense.	X	X	X		X	X
Fables often teach lessons.		X	X		X	X
Fairy tales are about imaginary people, places, and times long ago.		X	X		X	X
We can use different literary forms to express ourselves creatively, (jingles, poems, stories, and etc.)			X		X	
Various racial and national groups have contributed to our cultural heritage.		X	X		X	X
Rhythm, repetition, and alliteration add beauty to communication acts.	X	X	X	X	X	X
An autobiography is a story of a person's life written by the person himself.		X	X		X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
There are many different kinds of magazines.						X
Bible stories are tales of old.						X
Long ago folk tales were told by traveling story tellers.		X				X
Adventure stories contain mystery and suspense.		X	X		X	X
Science fiction stories are about unreal people and events.		X	X		X	X
Series books generally all contain some of the same characters or place settings.		X	X		X	X
Many stories include true historical facts.		X	X		X	X
A jingle is a verse or words with simple rhythm and frequent repetition.		X	X		X	X
A legend is a hero story.		X	X		X	X
A play is written to be performed before an audience.		X	X		X	X
Personal stories and poems can reflect an individual's feeling for his country.		X	X		X	X
Myths were early man's explanations of the supernatural and unknown.		X	X		X	X
Stories about legendary heros in America who accomplished the humanly impossible are called "Tall Tales."		X	X		X	X

APPLICATIONS

Perceptual-Conceptual Development	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Ability to effectively organize perceptual stimuli, generalize them, set concepts, and interpret them to others.	X	X	X	X	X	
Habit of acquiring and employing a diversified vocabulary.	X	X	X		X	X
Ability to associate specific sounds, words, actions, or ideas with concrete objects and true-to-life situations.	X	X	X	X	X	X
Skill in imagining and describing sounds, odors, textures and tastes.	X	X	X	X	X	X
Ability to interpret expressions that depict an emotion, moods, purposes, and viewpoints.	X					X
Skill in discriminating between the imaginary and real, fact or fiction.	X	X	X		X	X
Ability to feel the effects of each sense upon the others.	X	X	X	X	X	X
Ability to interpret humor, nonsense, imagination, or surprise.	X	X	X	X	X	X
Habit of using words which precisely depict or arouse sensory impressions.			X		X	
Ability to appropriately associate concepts related to time, space, cause, effect, number, color, humans, animals, animate, inanimate, abstract, concrete, emotion, position, direction, and etc.	X	X	X	X	X	X
Growing ability to employ more complex thinking and higher order association when communicating.	X	X	X	X	X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Skill in categorizing perceptions, gestures, symbols, words, phrases, and sentences.	X	X	X		X	X
Habit of building and extending concepts through new experiences.	X	X	X	X	X	X
Ability to express thoughts precisely with words, phrases, sentences, or actions.	X	X	X	X	X	X
Habit of relating what one perceives, hears, says, writes, reads, or demonstrates to personal experiences.	X	X	X	X	X	X
Skill in recognizing and interpreting the direct and implied.	X	X	X	X	X	X
Skill in recognizing figurative, idiomatic, or picturesque language.	X	X	X	X	X	X
Skill in recognizing elements of comparison and contrast.	X	X	X	X	X	X
Skill in interpreting multiple word meanings.		X	X		X	X
Ability to retain increasingly more complex ideas for future recall.	X	X			X	X
Ability to determine the effects of characterization, time, place, or unusual events upon the mood in a situation.	X	X	X	X	X	X
Skill in selecting the most appropriate synonyms or pertinent analogies when illustrating or clarifying.	X	X	X	X	X	X

Physiological Aspects	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Habit of assuming an appropriate postural position suited to the purpose set for an act of communication.	X	X	X	X	X	X
Habit of speaking in a naturally pitched, audible voice, maintaining appropriate rate and rhythm, with proper pause and breath			X			
Habit of facing the desk squarly, keeping both shoulders at the same level when writing					X	
Habit of sitting back in the chair with feet resting comfortably on the floor, resting both forearms on the desk at an equal distance from the body, and keeping the head in a natural position when writing.					X	
Habit of holding the pencil between the thumb and second finger with the first finger resting on the pencil at a distance of an inch or more from the pencil point.					X	
Habit of rounding the hand, supporting it on the finger tips of the third and fourth fingers, and allowing it to glide on the fingertips when writing.					X	
Habit of tilting the paper toward the left so that the lines of the paper and the writing arm form a right angle. (The left-handed writer tilts the paper toward the right at a similar angle)					X	
Habit of placing the left hand (right hand of left handed) at the top of the paper to hold it in place when writing.						X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Habit of using left to right eye movements in reading or observing	X					X
Ability to note differences and similariter between sounds, objects, textures, and etc.	X	X				X
Habit of reading a book from front to back; a page from top to bottom						X
Habit of using the lips, tongue, and teeth to enunciate clearly and correctly.			X			
Ability to produce orally all the consonant and vowel sounds and combinations.			X			
Habit of placing written and graphic material at eye level for ease of reading at the chalkboard						X
Skill in forming small and capital letters in manuscript or cursive writing in the prescribed system.					X	
Habit of being relaxed when engaging in a communication act.	X	X	X	X	X	X
Habit of maintaining a reasonable rate when speaking or writing.			X		X	
Habit of wearing glasses if prescribed.	X				X	X
Habit of holding books comfortably.						X

Mechanics	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Ability to recognize rhyming sounds.		X				X
Ability to perceive likenesses and differences in beginning consonant sounds, ending consonant sounds, and medial consonant sounds.		X				X
Skill in identifying and associating upper and lower case letters.						X
Skill in making symbol-sound associations		X	X		X	X
Skill in recognizing and discriminating between basic vocabulary words.		X				X
Habit of using configuration clues in word identification.						X
Ability to perceive and differentiate between consonant blends in all three positions.	x	x				X
Skill in noting double consonants.		X				X
Ability to recognize consonant digraphs in all three positions. wh ch th sh ck ng		X				X
Skill in recognizing consonant combinations having the same sound ph gh		X				X
Ability to distinguish between long and short vowel sounds		X				X
Skill in recognizing silent letters in words		X				X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Habit of noticing the effects of the letter "r" following a vowel.		X				X
Skill in recognizing the effects of l and w on vowel sounds.		X				X
Ability to note that vowel digraphs have one sound ay ai oa ee ea ie oe au.		X				X
Skill in recognizing the dipthongs ow ou oy oi ew aw.		X				X
Habit of applying generalizations for "c" and "g".		X				X
Ability to recognize common word families (ay, ake).		X				X
Habit of noting word length as a clue to identification.						X
Skill in recognizing compound words and their components.		X				X
Ability to recognize contracted word forms and their derivatives.		X				X
Skill in noting possessives of words.		X				X
Ability to recognize root or base words.		X				X
Habit of noting the effects of specific word endings.		X				X
Ability to recognize effects of some prefixes and suffixes (a, un, ex, dis, ful, less, ness).		X				X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Skill in forming plurals by adding s, es, ics, by changing f to v and adding es.		X				X
Skill in applying simple generalizations for syllabications.		X				X
Growing skill in hyphenating words correctly.					X	X
Habit of using consonant substitution in identifying or spelling new words.					X	X
Ability to spell correctly the words needed, referring to known generalizations.					X	
Habit of indenting the first word of a new paragraph.					X	

Functional Linguistics

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Ability to recognize the essentials and structure of stories and poems; parts of letters, invitations, notes; and varied formats for reports.		X	X		X	X
Habit of being courteous in all communication.	X	X	X	X	X	X
Growing ability to write, speak, and recognize simple and complex sentences.	X	X	X		X	X
Habit of employing and noting generalizations for capitalization and punctuation that affect structure.			X		X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Skill in discriminating between a sentence and a phrase.		X	X		X	X
Ability to differentiate between a question, statement, or exclamation.		X	X		X	X
Habit of employing appropriate intonation, phrasing, cadence, inflection, stress, gestures, and pause to effect mood or meaning.	X		X	X		X
Growing ability to participate effectively in communication activities such as storytelling, telephoning, sharing, describing, conversing, discussing, dramatizing, pantomiming, interviewing, reporting, writing poetry and stories, choral speaking, and others.	X	X	X	X	X	X
Growing ability to imitate and employ levels of usage appropriate to the setting and situation.			X		X	X
Ability to recognize recurring patterns and rhythm in our language.	X	X	X		X	X
Habit of including a person's title when addressed.			X		X	
Habit of varying beginnings of sentences in a story or paragraph.			X		X	
Growing ability to write cohesive paragraphs and stories.					X	
Habit of using non-vocal signals when appropriate.				X		
Habit of including only one negative in a given sentence.			X		X	
Skill in noting and selecting words that designate introductory, transitional, and concluding remarks in a story.		X	X		X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Habit of noting time, number, and situation before selecting the form of an action word.			X		X	
Habit of naming self last.			X		X	
Habit of using a helping word with some action words.			X		X	
Habit of using those and them correctly.			X		X	
Skill in forming compound pronouns such as themselves and himself correctly.			X		X	
Habit of using I, me, we, she, him, her, they, and us correctly.			X		X	
Skill in using "a", "the", and "an", properly.			X		X	
Habit of employing the correct degree of comparison with adjectives and adverbs.			X		X	
Ability to employ the correct form of an irregular verb.			X		X	
Comprehension						
Skill in interpreting, giving, or following a simple direction.		X		X	X	X
Ability to compose or recognize a simple sentence that expresses a complete thought.		X	X		X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Skill in recognizing and interpreting the main idea or theme.	X	X	X	X	X	X
Skill in recognizing and expressing sequence in events, stories, pictures, poetry, and etc.	X	X	X	X	X	X
Ability to recognize details, directly stated or observed and implied.	X	X			X	X
Skill in recognizing and employing picture words and action words.					X	X
Ability to find clues which help in anticipating the next step, event, or outcome.	X	X			X	X
Skill in using context clues as an aid to meanings.	X	X		X	X	X
Ability to include important details to support a main theme.	X	X	X	X	X	X
Ability to arrive at judgements and draw reasonable conclusions.	X	X	X	X	X	X
Skill in perceiving relationships so that satisfactory deductions, inferences and conclusions can be drawn.	X	X	X	X	X	X
Ability to generalize and predict outcomes.	X	X	X	X	X	X
Skill in determining the relevant and irrelevant.	X	X	X	X	X	X
Ability to note and express cause and effect relationships.	X	X	X	X	X	X

	PERCEIVING	LISTENING	SPEAKING	NONVERBAL SIGNALING	WRITING	READING
Skill in determining the authenticity, applicability, importance, interest value, or literary quality of an informational or pleasurable event or material.	X	X	X	X	X	X
Skill in organizing and summarizing.	X	X	X	X	X	X
Habit of perceiving, listening, speaking, and reading in thought units.	X	X	X		X	X
Study Techniques						
Habit of creating the best conditions possible for effective study or observation.	X	X	X		X	X
Habit of beginning a task promptly.	X	X	X		X	X
Habit of continualling evaluating personal performance in all acts of communication.	X	X	X	X	X	X
Habit of being discriminative in selecting that which is to be shared with others.	X	X	X	X	X	X
Ability to formulate simple captions for labeling objects and pictures.			X		X	X
Ability to attractively illustrate ideas, events, people, and objects graphically.	X				X	

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Habit of being quiet while using the library.						X
Habit of presenting materially in a logical order.			X		X	
Habit of proofreading all written work.						X
Habit of observing, listening, and reading a variety to obtain or substantiate information.	X	X			X	X
Habit of directing others to sources of information presented.					X	X
Ability to employ accepted library procedures.					X	X
Habit of writing (taking notes) specific information to be recalled.					X	
Skill in locating proper reference tools in the library.						X
Habit of using locational aids such as tables of contents in books, guide words in dictionaries, and the index of encyclopedias.						X
Ability to interpret vocabulary peculiar to specific content areas.		X	X		X	X
Skill in recognizing organizational patterns and factual relationships peculiar to a specific content area.		X	X		X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Ability to interpret specialized devices such as picture graphs and symbols.			X		X	X
Habit of adjusting rate to purpose.	X	X	X	X	X	X
Growing facility in library reference techniques.					X	X
Aesthetic and Cultural Appreciations						
Growing ability to select experiences and materials that meet a personal need or widen life's scope.	X	X	X	X	X	X
Ability to relate ideas gained through communication acts to personal living and personal problems.	X	X	X	X	X	X
Growing ability to understand one'self from observing, listening to, writing, or reading about others.	X	X	X		X	X
Habit of recognizing and enjoying animation of objects or animals.		X	X		X	X
Ability to recognize the characteristics of Mother Goose Rhymes.		X				X
Habit of associating a famous person's name with his accomplishment.	X	X	X		X	X
Ability to relate holidays to personal experiences and particular events.	X	X	X		X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Skill in differentiating between the fairy tale, fable, legend, folk tale, and myth.		X	X		X	X
Habit of enjoying and sensing elements that produce beauty in varieties of verse and prose.		X	X		X	X
Habit of sharing cultural and aesthetic experiences with others.			X		X	X
Skill in reading well orally in order to share aesthetic and cultural experiences.			X		X	X
Skill in employing a variety of literary forms to express ourselves.			X	X	X	X
PERSONAL RESPONSES						
Perceptual= Conceptual Development						
A continuing intensity of intellectual curiosity.	X	X	X	X	X	X
Desire to experience life in its fullest through all sensory modalities.	X	X	X	X	X	X
Respect for uniqueness in sounds, objects, design, words, figures or ideas, humans, and experiences.	X	X	X	X	X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Flexibility, fluency, and originality in creative communication.	X	X	X	X	X	X
Respect for the beauty and power in acts of communication.	X	X	X	X	X	X
Desire to express that which is sensed.	X		X	X	X	
Physiological Aspects						
Respect for and care of eyes, ears, vocal, and motor mechanisms through which communication is possible.	X	X	X	X	X	X
Desire to listen carefully, articulate and demonstrate accurately, observe and read efficiently, and write legible.	X	X	X	X	X	X
Mechanics						
Desire to use techniques of identification, vocal production, graphic illustration, and spelling independently.	X	X	X		X	X
Flexibility in election of a mechanical aid in a process of communication.	X	X	X	X	X	X
Functional Linguistics						
A growing desire to participate effectively in functional communication processes.	X	X	X	X	X	X
Increasing confidence and security in communication functions.	X	X	X	X	X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL SIGNALING	WRITING	READING
Kind acceptance of the linguistic differences, overt or inhibited, of others as manifested through communication.	X	X	X	X	X	X
Respect for and appreciation of the standards of linguistic structure.	X	X	X	X	X	X
Appreciation of the gift of linguistic organization through higher order thought processing.	X	X	X	X	X	X
Growing desire to employ linguistic signals (verbal and non-vocal) to secure understanding.	X	X	X	X	X	X
Respect for the changes in language in our changing society.	X	X	X	X	X	X
Desire to employ variety when participating in any communication act.	X	X	X	X	X	X
Comprehension						
Desire to employ techniques that will best insure understanding while communicating.	X	X	X	X	X	X
Guarding against personal bias and prejudice while interpreting.	X	X	X	X	X	X
Study Techniques						
Desire to create the best conditions possible for effective study or observation.	X	X	X	X	X	X

	PERCEIVING	LISTENING	SPEAKING	NON VERBAL	SIGNALING	WRITING	READING
Desire to begin tasks promptly.	X	X	X	X	X		X
Desire to continually evaluate personal performances in all acts of communication.	X	X	X	X	X		X
Appreciation of sources for information and pleasure.	X	X	X	X	X		X
Respect for library procedures.							X
Aesthetic and Cultural Appreciations.							
Growing respect for the contributions of others through communication.	X	X	X	X	X		X
Desire to extend, expand, and enrich one's personal life through the six language arts.	X	X	X	X	X		X
Enjoyment and appreciation of beauty in literature and life.	X	X	X	X	X		X
Desire to make worthwhile contributions to one's culture.	X	X	X	X	X		X
Growing appreciation of varied literary forms.	X	X	X	X	X		X

APPENDIX B

INTEGRATED EXPERIENCE APPROACH TO COMMUNICATION GUIDE

(The guide to the approach is presented under separate cover.)

APPENDIX C

SAMPLES OF MEASUREMENT INSTRUMENT

(Samples presented in Appendix C are those unique
to the Pittsburgh Project.)

INDIVIDUAL RECORD CHECK LIST

Maturity Level for School Entrance and Reading Readiness

FOR KINDERGARTEN AND FIRST GRADE

By KATHARINE M. BANHAM, Ph.D.

Name______________________ Boy__ Girl__

School______________________

Teacher______________________

Date______ Year ______ Month ______ Day

Born______ Year ______ Month ______ Day

Age ______ Years ______ Months

JAN. 1 FEB. 2 MARCH 3 APRIL 4 MAY 5 JUNE 6 JULY 7 AUG. 8 SEPT. 9 OCT. 10 NOV. 11 DEC. 12

BODILY COORDINATION

The child can . . .

____ 1. Hop on one foot.

____ 2. Skip, using feet alternately.

____ 3. Stand on one foot for ten seconds.

____ 4. Stand on each foot alternately, eyes closed.

____ 5. Walk three yards on toes without touching heels on the floor.

EYE-HAND COORDINATION

The child can . . .

____ 6. Cut out pictures neatly, following straight lines, angles and curves.

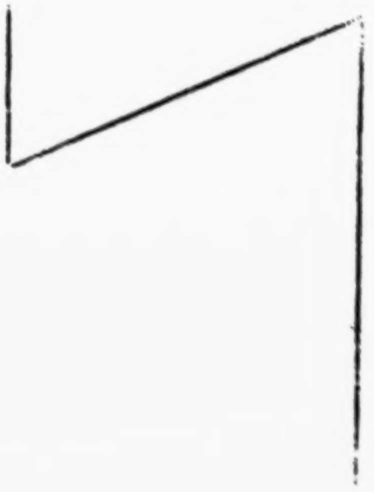
____ 7. Tie a shoelace in a loop bow.

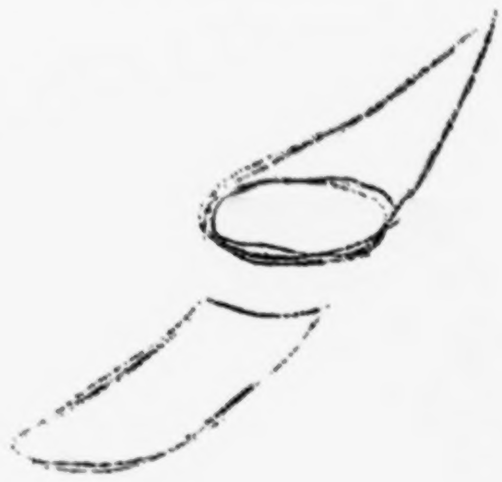
____ 8. Recognize and name five or more letters in a printed page of large type or newspaper headlines.

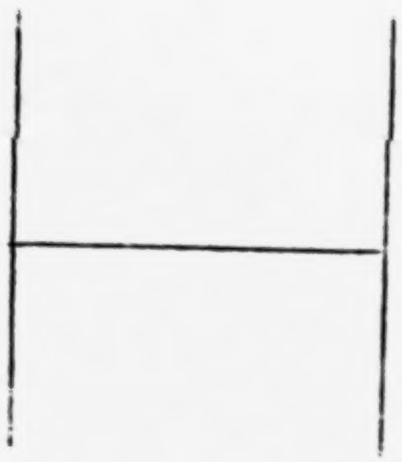
____ 9. Print own name or other short word.

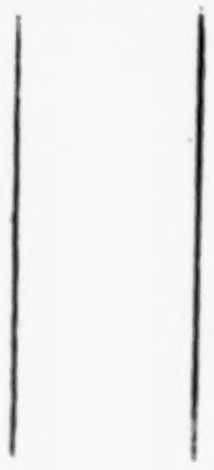
____ 10. Draw a recognizable man of head, body, arms, and legs without copy.

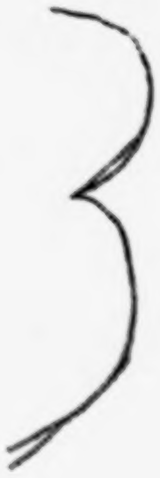
NAME ____________________________



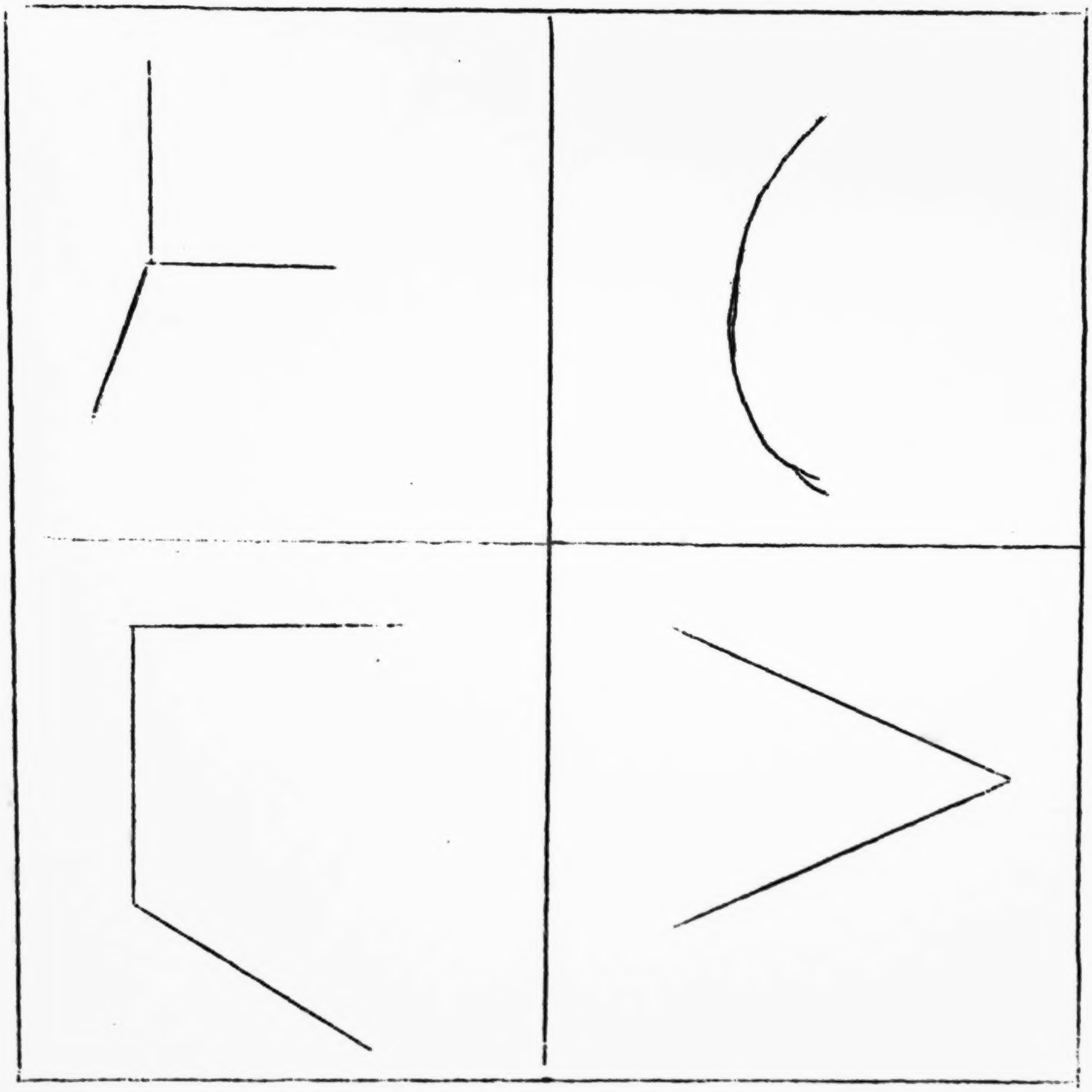


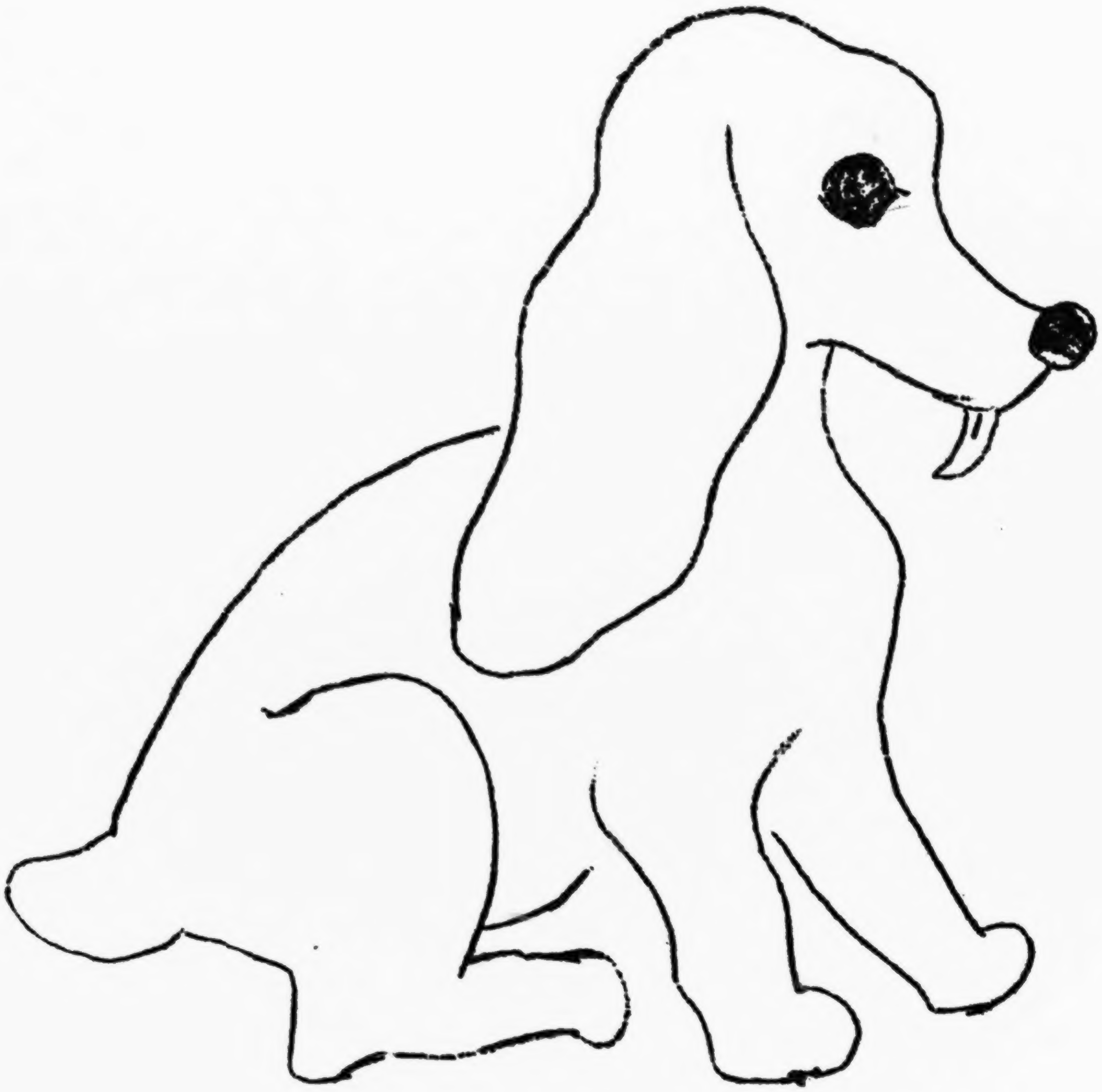






NAME ____





1. ______________________________

2. ______________________________

3. ______________________________

4. ______________________________

5. ______________________________

6. ______________________________

7. ______________________________

8. ______________________________

9. ______________________________

10. ______________________________

11. ______________________________

12. ______________________________

13. ______________________________

14. ______________________________

15. ______________________________

16. ______________________________

17. ______________________________

18. ______________________________

19. ______________________________

20. ______________________________

21 ______________________________

22. ______________________________

23. ______________________________

24. ______________________________

25. ______________________________

MEASURE OF SOCIAL INTEGRATION AND SOCIAL AWARENESS

(Teacher's Copy) (Directions are underlined)

1. Put a circle around the words that tell what you like to do best at home. (Permit time for response) Put an "X" on the words that tell what you like to do least. (Read the words as the children follow.)

   PLAY ALONE PLAY WITH MY PET PLAY WITH MY FRIENDS

2. Put a circle around the words that tell what you might like to do best in school. Put an "X" on the words that tell what you might like to do least at school. (Read the words as the children follow.)

   SHARE IDEAS OR HAPPENINGS WITH THE CLASS.
   DO WORK PAGES.
   COPY SENTENCES.

3. Put a circle around the words that tell the most important thing you should do after you finish drawing a picture. Put an "X" on the words that tell the least important thing you should do. (Read the words as the children follow.)

   PUT IT IN YOUR DESK
   LOOK AT IT TO SEE IF YOU HAVE DRAWN YOUR WHOLE IDEA FOR SOMEONE TO UNDERSTAND
   ASK YOUR TEACHER TO SEE IF YOU HAVE LEFT SOMETHING OUT.

4. Put a circle around the words that tell the polite thing to do when someone is speaking to you but you have something to say. Put an "X" on the words that tell the least polite thing to do. (Read the words as the children follow.)

   INTERRUPT THEM IF WHAT YOU HAVE TO SAY IS MORE INTERESTING.
   LISTEN TO THE PERSON UNTIL HE IS FINISHED SPEAKING, THEN SPEAK.
   WAIT TILL THE PERSON HAS FINISHED TALKING BUT DON'T LISTEN.

5. Put a circle around the words that tell what you would like to do most after reading and writing a story. Put an "X" around the words that tell what you would like to do least. (Read the words as the children follow.)

   SHARE IT WITH A FRIEND IN THE ROOM
   PUT IT IN YOUR DESK BEFORE ANYONE SEES IT
   COPY SOME OF THE WORDS

6. Put a circle around the words that tell which of these would be the most fun. Put an "X" on the words that tell which would be the least fun.

   MAKING OR DRAWING SOMETHING WITH A PARTNER IN YOUR CLASS
   COPYING NUMBERS
   WATCHING SOMEONE MAKE SOMETHING

NAME ______________________________

1. Play alone
   Play with my pet
   Play with my friends

2. Share ideas or happenings with the class
   Do work pages
   Copy sentences

3. Put it in your desk
   Look at it to see if you have drawn your whole idea for someone to understand
   Ask your teacher to see if you have left something out

4. Interrupt them if what you have to say is more interesting
   Listen to the person until he is finished speaking, then speak
   Wait till the person has finished talking but don't listen

5. Share it with a friend in the room
   Put it in your desk before anyone sees it
   Copy some of the words

6. Making or drawing something with a partner in your class
   Copying numbers
   Watching someone make something

DIAGNOSTIC RATING OF LANGUAGE OUTCOMES FOR FIRST GRADERS

(Rating Key: 1-lowest level of achievement
3-average level of achievement
5-highest level of achievement

Child's Name ______________________________

I. The Child Understands That:					
A. ideas, desires, feelings, and experiences can be expressed through use of appropriate words and can be recorded					
B. information and pleasure can be shared or obtained by listening, writing, reading, or speaking					
C. poems, true stories, fairy tales, and fables, have distinctive characteristics					
D. past, present, and future can be expressed through language					
E. there are appropriate times and places for specific language activities					
II. The Child Has Acquired the Habit Of:					
A. evaluating personal performance in all language activities					
B. obtaining information and pleasure through a variety of the mass media					
C. employing correct directional orientational procedures in reading and writing					
D. employing courtesy in all language activities					
E. becoming increasing discriminative in selecting quality communication offerings					
III. The Child Has Acquired the Ability To:					
A. participate effectively in functional language activities such as:					
1. conversation and discussion					
2. sharing					
3. story telling					
4. contributing to dictated stories and poems					
5. writing individual stories or poems					
6. dramatizing or cheral reading					

B. recognize a stock of basic vocabulary words	1	2	3	4	5
C. utilize aural and written context clues to interpretation					
D. critically interpret pictoral materials					
E. functionally apply word recognition techniques when reading					
F. recognize personal purposes for listening, speaking, writing and reading					
G. recognize elements of humor, reality, nonsense, adventure and the imaginary					
H. comprehend materials he reads and listens to					
I. recognize accepted classroom library procedures and study techniques					
J. independently use picture dictionaries or words files in creative writing					
IV. The Child Exhibits: A. respect for the contributions of others in communication processes					
B. a desire to listen, speak, write, and read effectively					
C. a desire to share ideas, feelings, and experiences through speaking, listening, reading and writing					
D. enjoyment of various literary forms					
E. a desire to extend his areas of reading interest					
F. growing appreciation of selections of literary worth					

HOLLINGSHEAD AND REDLICH

Index of Social Position

The following are factors yielding a raw score on each of the three aspects of social position considered by Hollingshead and Redlich:

Father's Education (X 5)

1. Graduate professional training.
2. Standard college or university training.
3. Partial college training.
4. High school graduation.
5. Partial high school (completed grade 10-11).
6. Junior high school only.
7. Less than 7 years of school.

Residence (X 6)

1. Fine, one family home in residential neighborhood.
2. Good one family home.
3. Good two family homes or good multiple-type dwellings.
4. Poor one or two family homes.
5. Poor multiple-type dwellings.
6. Poor tenement homes.

Occupation of Father (X 9)

1. Executive or proprietor of large concern.
2. Manager or proprietor of medium size business; professional.
3. Administrative personnel of large concern; semi-professional.
4. Owner of little business; clerical; sales; technical.
5. Skilled worker.
6. Semi-skilled worker .
7. Unskilled worker.

The Index of Social Position is the sum of the weighted scores for the three areas suggested.

RECORD BOOKLET—*Form L-M*

Stanford-Binet Intelligence Scale

Name.......... Sex..........

Address..........

School.......... Grade.......... Examiner.......... [From..........]
Agency

Parent..........

Birthplace.......... of father.......... of mother..........

Occupation of father.......... of mother..........

	Year	Month	Day
Date of test			
Birthdate			
Age			

CA..........

MA..........

IQ..........

FACTORS AFFECTING TEST PERFORMANCE

Overall Rating of Conditions

Optimal	Good	Average	Detrimental	Seriously detrimental

Attention

a) Absorbed by task.......... Easily distracted

Reactions During Test Performance

a) Normal activity level.......... Hyperactive or depressed
b) Initiates activity.......... Waits to be told
c) Quick to respond.......... Urging needed

Emotional Independence

a) Socially confident.......... Shy, reserved, reticent
b) Realistically self-confident.......... Distrusts own ability or overconfident
c) Comfortable in adult company.......... Ill-at-ease
d) Assured.......... Anxious about success

Problem Solving Behavior

a) Persistent.......... Gives up easily or can't give up
b) Reacts to failure realistically.......... Withdrawing, hostile, or denying
c) Eager to continue.......... Seeks to terminate
d) Challenged by hard tasks.......... Prefers only easy tasks

Independence of Examiner Support

a) Needs minimum of commendation.......... Needs constant praise and encouragement

Was it hard to establish a positive relationship with this person? ....

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C861

TEST SUMMARY

	Yrs.	Mos.
II		
II-6		
III		
III-6		
IV		
IV-6		
V		
VI		
VII		
VIII		
IX		
X		
XI		
XII		
XIII		
XIV		
AA		
SA I		
SA II		
SA III		
Total		

MA Score..........

Testing time..........

NAME______________________________ AGE__________ DATE OF TEST______________

YEAR II (6 tests, 1 month each; or 4 tests, 1½ months each)

☐ 1. ***Three-hole form board** (1+) [ ] a)........ b)........

☐ 2. **Delayed response** (2+) [ ] a) Middle........ b) Right........ c) Left........

☐ 3. ***Identifying parts of the body** (same as II-6, 2) (4+) [ ]

a) Hair........ b) Mouth........ c) Feet........ d) Ear........ e) Nose........ f) Hands........ g) Eyes........

☐ 4. **Block building: Tower** (±) [ ]

☐ 5. ***Picture vocabulary** (same as II-6, 4; III, 2; IV, 1) (3+) [ ]

1. airplane........	4. ball........	7. horse........	10. ship........	13. flag........	16. pocket knife........
2. telephone........	5. tree........	8. knife........	11. umbrella........	14. cane........	17. pitcher........
3. hat........	6. key........	9. coat........	12. foot........	15. arm........	18. leaf........

☐ 6. ***Word combinations** (±) [ ] Example ....

...... **Alternate. Identifying objects by name** (5+) [ ]

a) Dog........ b) Ball........ c) Engine........ d) Bed........ e) Doll........ f) Scissors........

_____ **Mos. credit at Year II**

YEAR II-6 (6 tests, 1 month each; or 4 tests, 1½ months each)

☐ 1. ***Identifying objects by use** (3+) [ ]

a) Cup........ b) Shoe........ c) Penny........ d) Knife........ e) Automobile........ f) Iron........

☐ 2. **Identifying parts of the body** (same as II, 3) (6+) [ ]

☐ 3. ***Naming objects** (5+) [ ]

a) Chair........ b) Automobile........ c) Box........ d) Key........ e) Fork........ f) Flag........

☐ 4. ***Picture vocabulary** (same as II, 5; III, 2; IV, 1) (8+) [ ]

☐ 5. ***Repeating 2 digits** (1+) [ ]

a) 4-7........ b) 6-3........ c) 5-8........

☐ 6. **Obeying simple commands** (2+) [ ] a)........ b)........ c)........

...... **Alternate. Three-hole form board: Rotated** (II, 1 must precede) (2+) [ ] a)........ b)........ c)........

_____ **Mos. Credit at Year II-6**

YEAR III (6 tests, 1 month each; or 4 tests, 1½ months each)

☐ 1. **Stringing beads** (4+) (2 min.) [ ]

☐ 2. ***Picture vocabulary** (same as II; II-6, 4; IV, 1) (10+) [ ]

☐ 3. ***Block building: Bridge** (±) [ ]

☐ 4. ***Picture memories** (1+) [ ] a)........ b)........

☐ 5. ***Copying a circle** (1+) [ ] a)........ b)........ c)........

☐ 6. **Drawing a vertical line** (±) [ ]

.... **Alternate. Repeating 3 digits** (1+) [ ]

a) 6-4-1........ b) 3-5-2........ c) 8-3-7........

____ **Mos. Credit at Year III**

YEAR III-6 (6 tests, 1 month each; or 4 tests, 1½ months each)

☐ 1. ***Comparison of balls** (3 of 3, or 5 of 6+) [ ]

a)........ b)........ c)......../ d)........ e)........ f)........

☐ 2. **Patience: Pictures** (1+) [ ]

a)........ b)........

☐ 3. ***Discrimination of animal pictures** (4+) [ ]

☐ 4. ***Response to pictures** (same as VI, A) (Level I, 2+) [ ]

a) Grandmother's story..
....
....
....

b) Birthday party..
....
....
....

c) Wash day..
....
....
....

☐ 5. **Sorting buttons** (2 min. ±) [ ] Errors........

☐ 6. ***Comprehension I** (1+) [ ]

a).. b)..

.... **Alternate. Comparison of sticks** (3 of 3, or 5 of 6+) [ ]

a)........ b)........ c)......../ d)........ e)........ f)........

____ **Mos. credit at Year III-6**

YEAR IV (6 tests, 1 month each; or 4 tests, 1½ months each)

☐ 1. ***Picture vocabulary** (same as II, 5; II-6, 4; III, 2) (14+) [ ]

☐ 2. ***Naming objects from memory** (2+) [ ] a)........ b)........ c)........

☐ 3. ***Opposite analogies I** (same as IV-6, 2) (2+) [ ]

a)............... b)............... c)............... d)............... e)...............

☐ 4. ***Pictorial identification** (same as IV-6, A) (3+) [ ]

a) Stove........ b) Umbrella........ c) Cow........ d) Rabbit........ e) Moon........ f) Cat........

☐ 5. **Discrimination of forms** (8+) [ ]

☐ 6. **Comprehension II** (2+) [ ]

a).. b)..

...... **Alternate. Memory for sentences I** (1+) [ ]

a) We are going to buy some candy for mother.

b) Jack likes to feed the little puppies in the barn.

____ **Mos. Credit at Year IV**

YEAR IV-6 (6 tests, 1 month each; or 4 tests, 1½ months each)

☐ 1. **Aesthetic comparison** (3+) [ ] a)........ b)........ c)........

☐ 2. ***Opposite analogies I** (same as IV, 3) (3+) [ ]

☐ 3. ***Pictorial similarities and differences I** (3+) [ ]

a)........ b)........ c)........ d)........ e)........

☐ 4. **Materials** (2+) [ ] a) House........ b) Window........ c) Book........

☐ 5. ***Three commissions** (3+) [ ] a)........ b)........ c)........

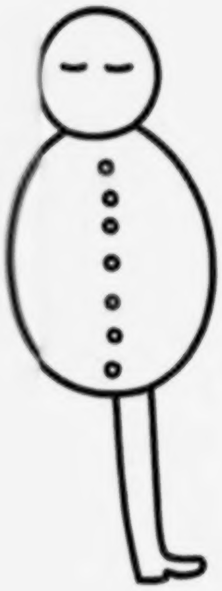
☐ 6. ***Comprehension III** (1+) [ ]

a).. b)..

...... **Alternate. Pictorial identification** (same as IV, 4) (4+) [ ]

____ **Mos. credit at Year IV-6**

YEAR V (6 tests, 1 month each; or 4 tests, 1½ months each)



☐ 1. ***Picture completion: Man** (2 points+) [ ]

☐ 2. **Paper folding: Triangle** (±) [ ]

☐ 3. ***Definitions** (2+) [ ] a) Ball........ b) Hat........ c) Stove........

☐ 4. ***Copying a square** (1+) [ ] a)........ b)........ c)........

☐ 5. **Pictorial similarities and differences II** (9+) [ ]

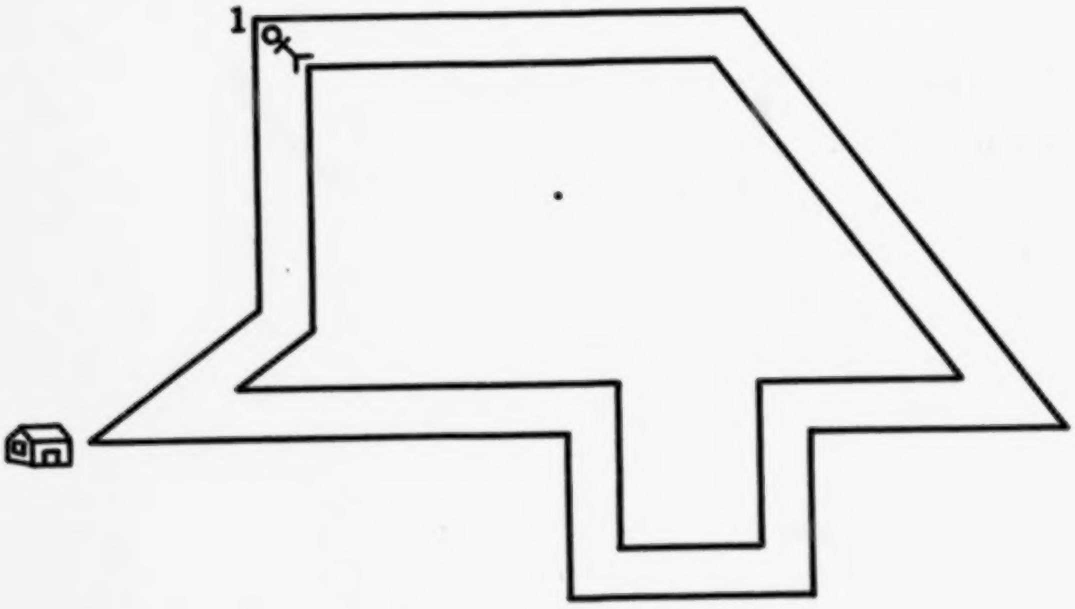
a)........ b)........ c)........ d)........ e)........

f)........ g)........ h)........ i)........ j)........

☐ 6. ***Patience: Rectangles** (2+) [ ] a)........ b)........ c)........

...... **Alternate. Knot** (±) [ ]

____ **Mos. credit at Year V**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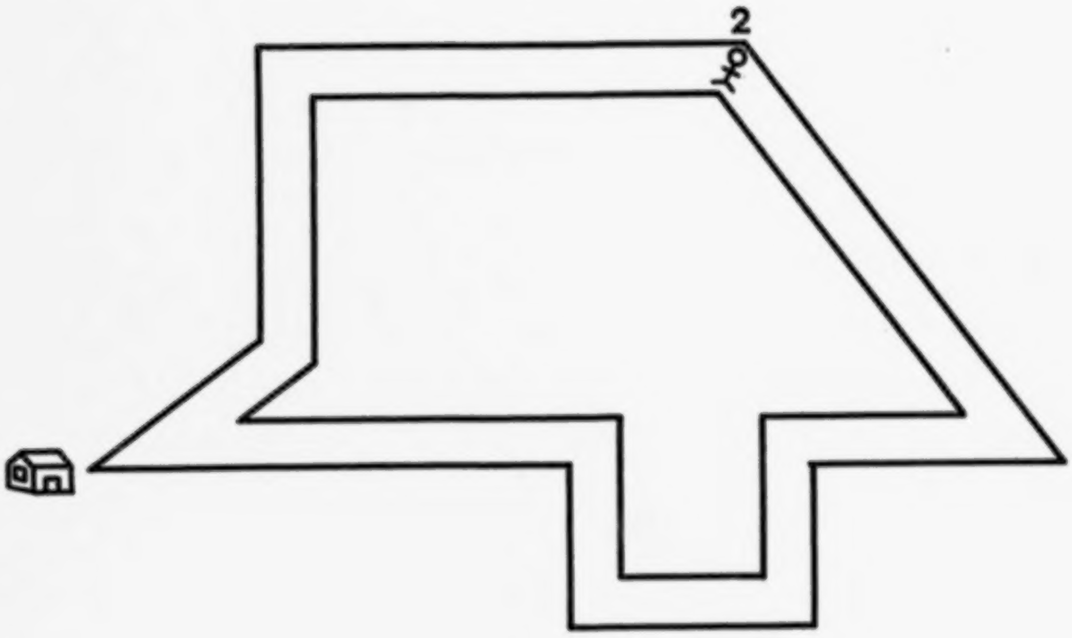
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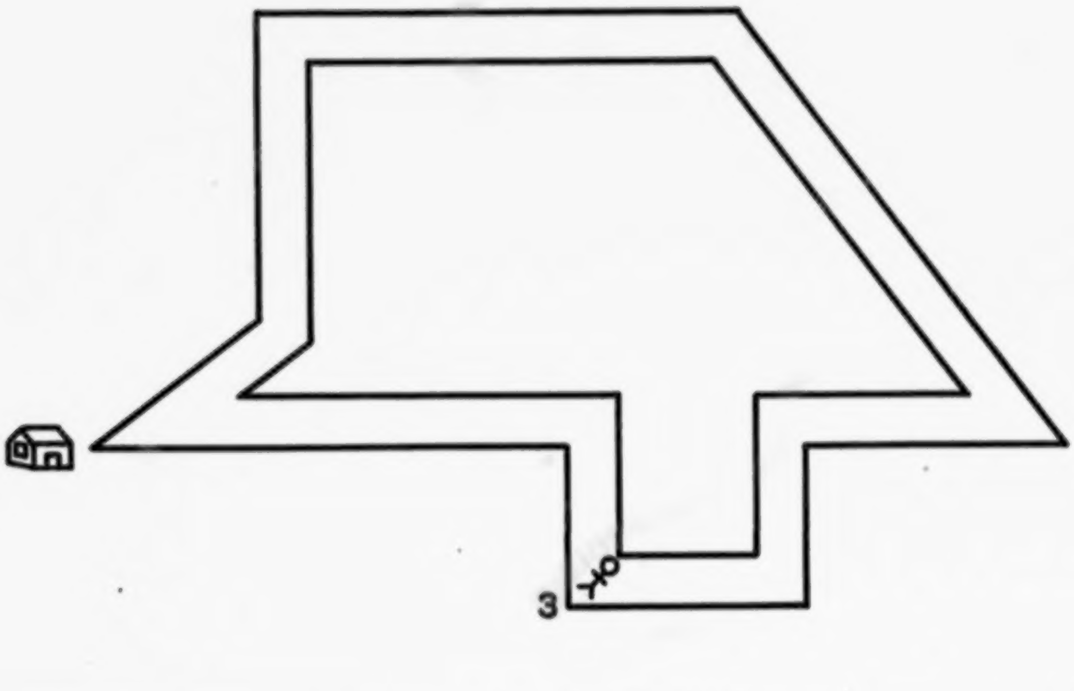
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YEAR VI (6 tests, 2 months each; or 4 tests, 3 months each)

☐ 1. ***Vocabulary** (6+) [ ]

☐ 2. ***Differences** (2+) [ ]
   a) Bird and dog..
   b) Slipper and boot..
   c) Wood and glass..

☐ 3. **Mutilated pictures** (4+) [ ]
   a)............ b)............ c)............ d)............ e)............

☐ 4. ***Number concepts** (4+) [ ] a)....... b)....... c)....... d)....... e).......

☐ 5. ***Opposite analogies II** (3+) [ ] a)............ b)............ c)............ d)............

☐ 6. **Maze tracing** (2+) [ ] a)....... b)....... c).......

.... **Alternate. Response to pictures** (same as III-6, 4) (Level II, 2+) [ ]

____ **Mos. credit at Year VI**

YEAR VII (6 tests, 2 months each; or 4 tests, 3 months each)

☐ 1. **Picture absurdities I** (4+) [ ]
   a)..
   b)..
   c)..
   d)..
   e)..

☐ 2. ***Similarities: Two things** (2+) [ ]
   a) Wood and coal..
   b) Apple and peach..
   c) Ship and automobile..
   d) Iron and silver..

☐ 3. ***Copying a diamond** (1+) [ ] a)....... b)....... c).......

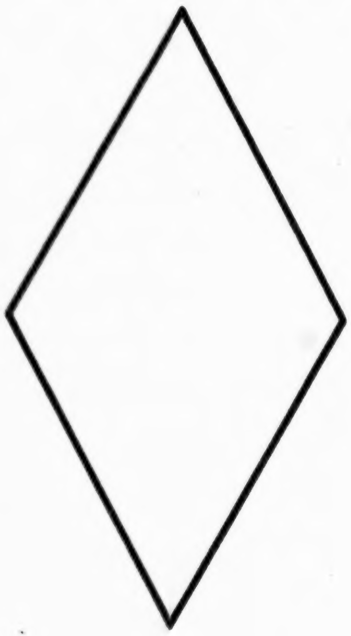
☐ 4. ***Comprehension IV** (same as VIII, 5) (3+) [ ]
   a)..
   b)..
   c)..
   d)..
   e)..
   f)..

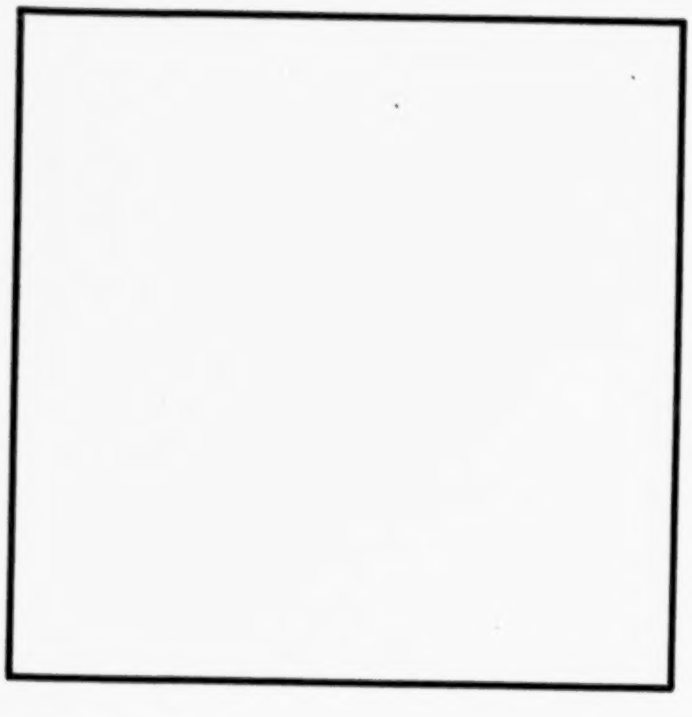
☐ 5. **Opposite analogies III** (2+) [ ]
   a)............ b)............ c)............ d)............

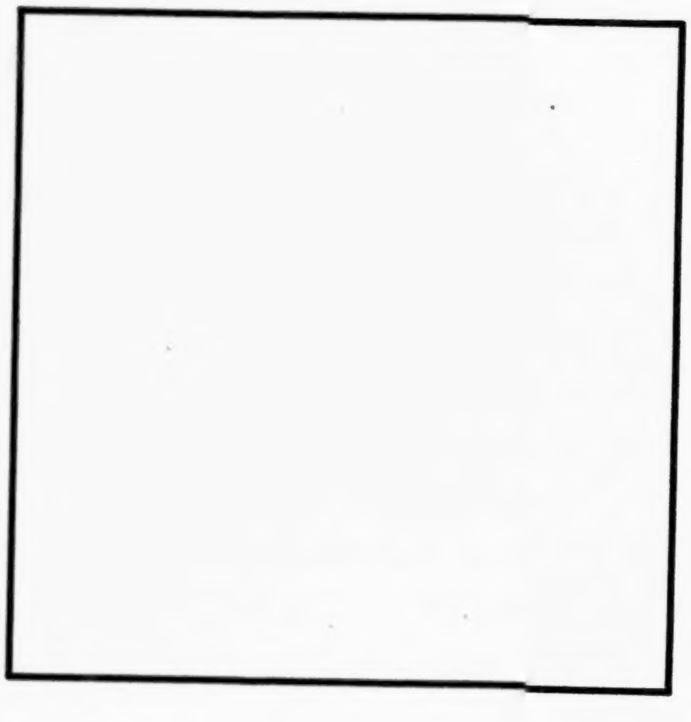
☐ 6. ***Repeating 5 digits** (1+) [ ]
   a) 3-1-8-5-9.................... b) 4-8-3-7-2.................... c) 9-6-1-8-3....................

.... **Alternate. Repeating 3 digits reversed** (1+) [ ]
   a) 2-9-5....... b) 8-1-6....... c) 4-7-3.......

____ **Mos. credit at Year VII**







YEAR VIII (6 tests, 2 months each; or 4 tests, 3 months each)

☐ 1. *Vocabulary (8+) [ ]

☐ 2. Memory for stories: The Wet Fall (5+) [ ]
a)................ b)................ c)................ d)................
e)................................ f)................................

☐ 3. *Verbal absurdities I (3+) [ ]
a)..
b)..
c)..
d)..

☐ 4. *Similarities and differences (3+) [ ]
a) Baseball — orange..
b) Airplane — kite..
c) Ocean — river..
d) Penny — quarter..

☐ 5. *Comprehension IV (same as VII, 4) (4+) [ ]

☐ 6. Naming the days of the week (order correct. 2 checks+) [ ] *Tu*........ *Thu*........ *Fri*........

.... Alternate. Problem situations I (2+) [ ]
a)..
b)..
c)..

____ Mos. credit at Year VIII

YEAR IX (6 tests, 2 months each; or 4 tests, 3 months each)

☐ 1. Paper cutting (same as XIII, A) (1+) [ ] a)........ b)........

☐ 2. Verbal absurdities II (same as XII, 2) (3+) [ ]
a)..
b)..
c)..
d)..
e)..

☐ 3. *Memory for designs I (same as XI, 1) (1+ or 2 with ½ credit each) [ ] a)........ b)........

☐ 4. *Rhymes: New form (3+) [ ] a)........ b)........ c)........ d)........

☐ 5. *Making change (2+) [ ] a) 10-4........ b) 15-12........ c) 25-4........

☐ 6. *Repeating 4 digits reversed (1+) [ ]
a) 8-5-2-6................ b) 4-9-3-7................ c) 3-6-2-9................

.... Alternate. Rhymes: Old form (2+) (30 sec. ea.) [ ]
a)..
b)..
c)..

____ Mos. credit at Year IX

YEAR X (6 tests, 2 months each; or 4 tests, 3 months each)

☐ 1. ***Vocabulary** (11+) [ ]

☐ 2. **Block counting** (8+) [ ]

☐ 3. ***Abstract words I** (same as XII, 5) (2+) [ ]

a) Pity
b) Curiosity
c) Grief
d) Surprise

☐ 4. **Finding reasons I** (2+) [ ]

a)
b)

☐ 5. ***Word naming** (28 words in one minute+) [ ]

☐ 6. ***Repeating 6 digits** (1+) [ ]

a) 4-7-3-8-5-9 b) 5-2-9-7-4-6 c) 7-2-8-3-9-4

.... **Alternate. Verbal absurdities III** (2+) [ ]

a)
b)
c)

____ **Mos. credit at Year X**

YEAR XI (6 tests, 2 months each; or 4 tests, 3 months each)

☐ 1. ***Memory for designs I** (same as IX, 3) (1½+) [ ]

☐ 2. ***Verbal absurdities IV** (2+) [ ]

a)
b)
c)

☐ 3. ***Abstract words II** (same as XIII, 2) (3+) [ ]

a) Connection
b) Compare
c) Conquer
d) Obedience
e) Revenge

☐ 4. **Memory for sentences II** (1+) [ ]

a) At the summer camp the children get up early in the morning to go swimming.
b) Yesterday we went for a ride in our car along the road that crosses the bridge.

☐ 5. **Problem situation II** (±) [ ]

☐ 6. ***Similarities: Three things** (3+) [ ]

a) Snake — cow — sparrow
b) Rose — potato — tree
c) Wool — cotton — leather
d) Knifeblade — penny — piece of wire
e) Book — teacher — newspaper

.... **Alternate. Finding reasons II** (2+) [ ]

a)
b)

____ **Mos. credit at Year XI**

YEAR XII (6 tests, 2 months each; or 4 tests, 3 months each)

☐ 1. ***Vocabulary** (15+) [ ]
☐ 2. ***Verbal absurdities II** (same as IX, 2) (4+) [ ]
☐ 3. **Picture absurdities II: The Shadow** (±) [ ]

....

☐ 4. **Repeating 5 digits reversed** (1+) [ ]
a) 8-1-3-7-9.................. b) 6-9-5-8-2.................. c) 9-2-5-1-8..................
☐ 5. ***Abstract words I** (same as X, 3) (3+) [ ]
☐ 6. ***Minkus completion I** (5 min.) (3+) [ ]
.... **Alternate. Memory for designs II** (±) [ ]
______ **Mos. credit at Year XII**

YEAR XIII (6 tests, 2 months each; or 4 tests, 3 months each)

☐ 1. ***Plan of search** (±) [ ]
☐ 2. ***Abstract words II** (same as XI, 3) (4+) [ ]
☐ 3. **Memory for sentences III** (1+) [ ]
a) The airplane made a careful landing in the space which had been prepared for it.
b) Tom Brown's dog ran quickly down the road with a huge bone in his mouth.
☐ 4. ***Problems of fact** (2+) [ ]
a)..
b)..
c)..
☐ 5. ***Dissected sentences** (2+) (1 min. ea.) [ ]
a)..
b)..
c)..
☐ 6. **Copying a bead chain from memory** (±) (2 min.) [ ]
.... **Alternate. Paper cutting** (same as IX, 1) (2+) [ ]
______ **Mos. credit at Year XIII**

YEAR XIV (6 tests, 2 months each; or 4 tests, 3 months each)

☐ 1. ***Vocabulary** (17+) [ ]
☐ 2. ***Induction** (±) [ ] a)........ b)........ c)........ d)........ e)........ f)........ Rule:....................
☐ 3. ***Reasoning I** (±) [ ]
☐ 4. ***Ingenuity I** (same as AA, 2; SA II, 4) (1+) (3 min. ea.) [ ]
a)..
b)..
c)..
☐ 5. **Orientation: Direction I** (3+) [ ] a)........ b)........ c)........ d)........ e)........
☐ 6. **Reconciliation of opposites** (same as SA I, A) (2+) [ ]
a) Winter — summer.................... d) Much — little....................
b) Happy — sad.................... e) Beginning — end....................
c) Loud — soft....................
.... **Alternate. Ingenuity II** (1+) (3 min. ea.) [ ]
a)..
______ **Mos. credit at Year XIV**

MINKUS COMPLETION I

a) We like to pop corn .... to roast chestnuts over the fire.

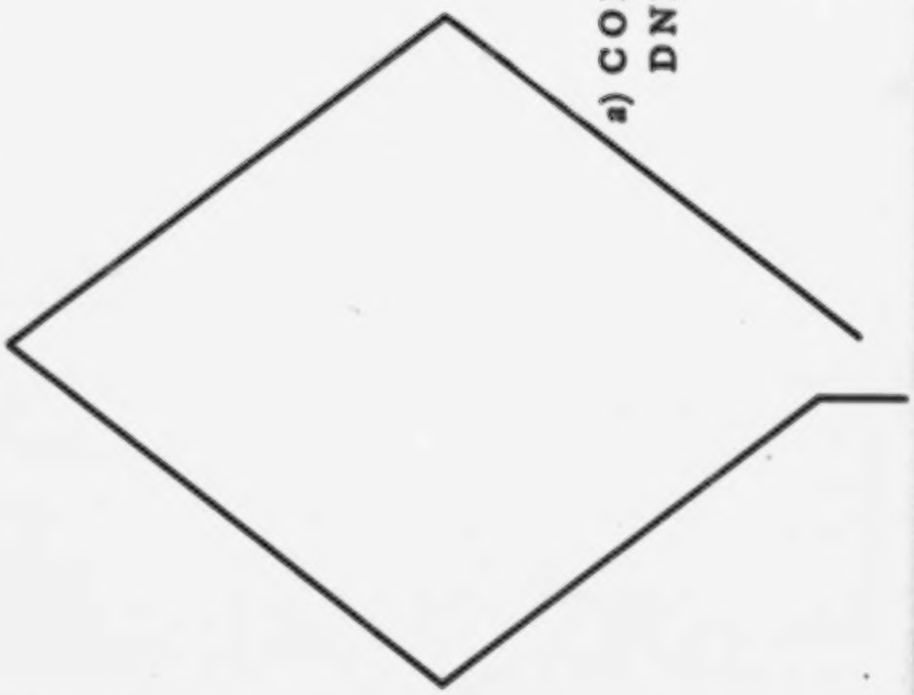
b) One cannot always be a hero, ... one can always be a man.

c) The streams are dry .... there has been little rain.

d) Lincoln aroused no jealousy .... he was not selfish.

b) COME TO LONDON
APKF RP JPLEMO
HURRY

a) COME TO LONDON
DNND UN MNOCPM
HURRY



MINKUS COMPLETION II

a) He is............................well grounded in geography.................................his brother,..................................... he is not so quick in arithmetic.

b) .... he give me his word, I will not trust him.

c) You must not, ..., imagine that my silence has been due to ignorance of what is going on.

d) .... either of us could speak, we were at the bottom of the stairs.

AVERAGE ADULT (8 tests, 2 months each; or 4 tests, 4 months each)

☐ 1. ***Vocabulary** (20+) [ ]

☐ 2. ***Ingenuity I** (same as XIV, 4; SA II, 4) (2+) (3 min. ea.) [ ]

☐ 3. ***Differences between abstract words** (2+) [ ]
  a) Laziness and idleness........
  b) Poverty and misery........
  c) Character and reputation........

☐ 4. **Arithmetical reasoning** (2+) (1 min. ea.) [ ] a)........ b)........ c)........

☐ 5. **Proverbs I** (2+) [ ]
  a)........
  b)........
  c)........

☐ 6. **Orientation: Direction II** (4+) [ ]
  a)........ b)........ c)........ d)........ e)........

☐ 7. ***Essential differences** (same as SA II, 5) (2+) [ ]
  a) Work and play........
  b) Ability and achievement........
  c) An optimist and a pessimist........

☐ 8. **Abstract words III** (4+) [ ]
  a) Generosity........
  b) Independent........
  c) Envy........
  d) Authority........
  e) Justice........

.... **Alternate. Binet paper cutting** (±) [ ]

____ **Mos. credit at Average Adult Level**

SUPERIOR ADULT I (6 tests, 4 months each; or 4 tests, 6 months each)

☐ 1. ***Vocabulary** (23+) [ ]

☐ 2. **Enclosed box problem** (4+) [ ] a)........ b)........ c)........ d)........

☐ 3. ***Minkus completion II** (2+) (5 min.) [ ]

☐ 4. ***Repeating 6 digits reversed** (1+) [ ]
  a) 4-7-1-9-5-2........ b) 5-8-3-6-9-4........ c) 7-5-2-6-1-8........

☐ 5. ***Sentence building** (2+) [ ]
  a) Ceremonial — dignity — impression........
  b) Baffle — cunning — pursuit........
  c) Failure — business — incompetent........

☐ 6. **Essential similarities** (3+) [ ]
  a) Farming and manufacturing........
  b) Melting and burning........
  c) An egg and a seed........

.... **Alternate. Reconciliation of opposites** (same as XIV, 6) (4+) [ ]

____ **Mos. credit at Superior Adult Level I**

SUPERIOR ADULT II (6 tests, 5 months each; or 4 tests, 7½ months each)

☐ 1. ***Vocabulary** (26+) [ ]

☐ 2. **Finding reasons III** (2+) [ ]

a)..

b)..

☐ 3. ***Proverbs II** (1+) [ ]

a)..

b)..

☐ 4. ***Ingenuity I** (same as XIV, 4; AA, 2) (3+) (3 min. ea.) [ ]

☐ 5. ***Essential differences** (same as AA, 7) (3+) [ ]

☐ 6. **Repeating thought of passage I: Value of Life** (4 or 5 of 7, +) [ ]

Many opinions have been given on the value of life. | Some call it good, | others call it bad. | It would be nearer correct to say that it is mediocre, | for on the one hand our happiness is never as great as we should like, | and on the other hand our misfortunes are never as great as our enemies would wish for us. | It is this mediocrity of life which prevents it from being radically unjust.

.... **Alternate. Codes** (1+ or 2 with ½ credit each) (3 min. ea.) [ ] a)........ b)........

____ **Mos. credit at Superior Adult Level II**

SUPERIOR ADULT III (6 tests, 6 months each; or 4 tests, 9 months each)

☐ 1. ***Vocabulary** (30+) [ ]

☐ 2. **Proverbs III** (2+) [ ]

a)..

b)..

c)..

☐ 3. ***Opposite analogies IV** (2+) [ ] a)........................ b)........................ c)........................

☐ 4. **Orientation: Direction III** (2+) [ ] a)........ b)........

☐ 5. ***Reasoning II** (5 min.) (±) [ ]

☐ 6. ***Repeating thought of passage II: Tests** (4 of 8, +) [ ]

Tests such as we are now making are of value both for the advancement of science and | for the information of the person who is tested. | It is important for science to learn how people differ and | on what factors these differences depend. | If we can separate the influence of heredity from the influence of environment, | we may be able to apply our knowledge so as to guide human development. | We may thus in some cases correct defects and | develop abilities which we might otherwise neglect.

.... **Alternate. Opposite analogies V** (2+) [ ]

a)........................ b)........................ c)........................

____ **Mos. credit at Superior Adult Level III**

VOCABULARY

Score........................

.... 1. orange..
.... 2. envelope..
.... 3. straw...
.... 4. puddle..
.... 5. tap...
.... 6. gown..
.... 7. roar..
.... 8. eyelash...
.... 9. Mars..
........10. juggler...
........11. scorch..
........12. lecture...
........13. skill...
........14. brunette..
........15. muzzle..
........16. haste...
........17. peculiarity...
........18. priceless...
........19. regard..
........20. tolerate..
........21. disproportionate..
........22. lotus...
........23. shrewd..
........24. mosaic..
........25. stave...
........26. bewail..
........27. ochre...
........28. repose..
........29. ambergris...
........30. limpet..
........31. frustrate...
........32. flaunt..
........33. incrustation..
........34. retroactive...
........35. philanthropy....................................
........36. piscatorial.....................................
........37. milksop...
........38. harpy...
........39. depredation.....................................
........40. perfunctory.....................................
........41. achromatic......................................
........42. casuistry.......................................
........43. homunculus......................................
........44. sudorific.......................................
........45. parterre..

Age Level	Score
VI	6
VIII	8
X	11
XII	15
XIV	17
AA	20
SA I	23
SA II	26
SA III	30